# Virginia Medical Monthly

**Official Organ of the Medical Society of Virginia**

Vol. 57, No. 11.
WHOLE No. 944.

RICHMOND, VA., FEBRUARY, 1931

20 CENTS A COPY
$2.00 A YEAR


## LOUIS PASTEUR.*


By R. H. GARTHRIGHT, M. D., Vinton, Va.


Is it not meet and proper for scientific bodies to sometimes pause in the midst of technical deliberations and review some of the achievements and characteristics of our outstanding men of science?

Those who have closely studied the life and work of Louis Pasteur unhesitatingly proclaim him the foremost scientist of the nineteenth century.

He entered life shortly after the European continent emerged from the tragic war waged by Napoleon Bonaparte, in which many of the forceful and promising young men of France were slain.

From his patriotic father and his brilliant, tender-hearted and generous mother he inherited qualities of head and heart that guided him amid trials and difficulties to a most useful and distinguished career.

The record of his life, so lucidly and graphically drawn by Radot, is most enjoyable, and intensely thrilling. He states that "in all things his father and mother took an interest in noble motives and principles; their material life was lightened and illumined by their moral life."

We are all aware of the fact that when he began his chemical and other scientific studies, contagious and infectious diseases were not understood.

Nobody is yet wise enough to tell when man first made his appearance on the earth; neither can any one state positively the origin of his most destructive enemies; but, we may assert with almost absolute certainty, spontaneous generation being proved a myth, that invisible disease germs were created coevally with man. They remained undisturbed, feasting luxuriously, and rioting in the blood and flesh of man and beast from time immemorial, driving millions of our ancestors down to premature graves, while the poor helpless and ignorant victims knew not why they were doomed so early in life to "shuffle off the mortal coil."

Today we know that since history began, down through the centuries, these infinitesimal organisms have attacked, crippled and slain men, decimated the population of mighty nations, destroyed valuable industries, and impoverished the inhabitants over vast areas of this globe.

Ancient literature reveals the fact that doctors were acquainted with the symptoms, and could frequently form correct prognoses of diseases, but their etiology was enveloped in deepest darkness. Even near the close of the nineteenth century the minds of many remained beclouded on this subject. Elaborate theses couched in classic diction were multiplied into tomes, but brought no glow of light on the subject of etiology.

Hear Osler:—"At the middle of the last century we did not know much more of the scourges of the race, the plagues, the fevers and the pestilences than did the Greeks."

It is known that for years after the coming of the microscope, when germs became visible, men had no idea how they functioned, and even today "doubting Thomases" appear when a novel medical thought is published.

Some of us remember a unique scene in the Princess Anne Hotel at Virginia Beach in 1898, when the State Society met at that resort. Dr. E. C. Levy read a paper on *Do Bacteria Produce Disease?* He made the statement that the science of bacteriology was then less than twenty years old. Most of the doctors present agreed with the thoughts expressed in the paper, but when he concluded, certain gentlemen of the profession, cultured, intellectual and forceful in debate, refused to accept the new and startling idea, stood up and, with vehement eloquence, denied and derided the statements coming from one whom they really believed a young and ignorant upstart. One of them said, in substance, "Bugs do not cause me the least alarm. They are *not* producers of disease. The microorganisms

*Read before the Roanoke Academy of Medicine, June 2, 1930, and published by request of the Academy.

found in the throat of a diphtheritic child are not only perfectly harmless, but beneficial, because they act as scavengers, devouring the rotten membrane, thus clearing the plugged laryngeal channel and making respiration soft and easy!"

Doubters are always ready to minimize new and important medical discoveries, and to pronounce them of no practical value. To them the dawn that appeared to Pasteur was but "a shadow scarce worth noticing."

Woeful, indeed, were the calamities wrought by germs of contagion prior to the realization of their evil potency. Then brave men fought the unseen foe, and died in the conflict. Have we forgotten the hero and martyr who fell fighting for his people in the city of Norfolk, Va., during the terrible scourge of yellow fever in the summer of 1855, when more than two thousand men, women and children died with the disease? Is there a monument erected to the memory of the brave and noble-hearted Upshur?

We shudder when we think of the hopeless condition of the wounded soldiers in the wars of the past, when infection ran riot, and gangrene thrust its deadly talons into broken tissues reeking with horrible and nauseating odors. Young men, bright and hopeful, clinging to life, languished and died by thousands because medicine and surgery were powerless to save them.

But, at last, out of the gross darkness, a light appeared. Louis Pasteur saw the glimmer springing from out the shadows. Then came more light, and finally a brightness like unto the noonday. We are all acquainted with the activities of this man of genius and power. It would not be in accord with the "eternal fitness of things" to describe in detail before this body of doctors and scientists his many remarkable discoveries. Only a few will be mentioned.

The silk worm industry was rapidly passing out of existence because of the presence of a fatal malady among the worms, impoverishing thousands depending on sericulture for a living. After several years spent in investigation he found the cause of this malady, and also the cure, restored the industry, to the relief and comfort of many of his countrymen, as well as to people in other lands.

He touched and relieved the fatal contagion of sheep, hogs, and cattle, a discovery that, to this day, brings untold wealth to the world's population.

He proved the doctrine of spontaneous generation false, declaring, "Those who affirm it have been duped by illusions, by ill-conditioned experiments, spoilt by errors they either did not perceive or did not know how to avoid."

In the year 1880 he was the first to cultivate streptococci from cases of puerperal infection (Whitridge Williams).

Lister had already introduced antiseptics into the lying-in room.

Pasteur exhibited the chain microbe, which M. Roux declared the most frequent cause of infection in recently delivered women. Lister said to him, "You have raised the veil which for centuries had covered infectious diseases. You have discovered and demonstrated their microbian nature."

His proof that wounds become infected by germs from without awakened interest that revolutionized the practice of surgery.

"His perseverance equalled his penetration." In the study of a subject he attacked it from every angle. He urged: "*Exhaust every combination until the mind can conceive no others possible.*" He analyzed, experimented, and compared, proving point after point until every doubt was banished, then gave the answer, and his critic's statements fell flat before the truth.

In the face of his lucid demonstrations that, it seems, a moron could grasp and comprehend, his critics continued their senseless nagging, and a few medical men of more or less prominence, jealous and vindictive in their attitude toward him, declared his methods unfit in the treatment of disease, hurling at him in vicious and sarcastic tones, the words, "Not a doctor, but *a mere chemist.*"

But, while annoyed and sometimes exasperated, he declared: "*They shall* see. I will make them see. A man of science should think of what will be said of him in the following century; not of the insults or the compliments of one day."

He gave forth benedictions while he lived. His biological researches brought results that will continue to strengthen and enrich the nations of earth to the end of time.

He labored to diminish the sorrows of humanity. "Whatever the obstacle, he was persuaded that science would continue its civiliz-

ing progress, and its benefits would spread from domain to domain."

No citizen of France excelled him in patriotic fervor. Ardently he loved his country, and deeply lamented that a physical affliction, attacking him in mid-life, precluded his entrance into the army in the disastrous conflict with the German hosts in 1870.

He was rightly called the "Precursor of the Medicine of the Future, and a Benefactor of Humanity" (Dr. Fleys).

He was the first to show the infectious nature of hydrophobia, ascribing to it a toxin developed by a microorganism (Tyson).

Vulpian said: "The discovery of the preventive treatment of hydrophobia after a bite, *entirely due to* M. Pasteur's experimental genius, is one of the finest experiments ever made, both from the scientific and the humanitarian point of view." And Charcot: "I am persuaded that I express in these words the opinion of all the medical men who have studied the question with an open mind, free from prejudice,—'The inventor of an antirabic vaccination may now, more than ever, hold his head high, and continue to accomplish his glorious task, heedless of the clamor and contradiction of the insidious murmurs of slander.'"

Huxley declared in the eighties that his discoveries had already brought wealth to France sufficient to pay her war indemnity to Germany. Under the use of antiseptics, surgical mortality had been reduced from 50 to 5 per cent; confinement cases in hospitals from two hundred per thousand to one per thousand. *Marvelous! Magical! Glorious!*

When we catch the meaning of the magnitude of the work of this wizard in the field of science we stand amazed, and instinctively breathe the grateful prayer of the poet-preacher of Vinton:

> "We thank thee, Lord of days now gone,
> For men who wrought, and met the dawn."
> —*Joseph Herbert Bean.*

Great and good leaders of men in the past subdued corrupt nations, and established kingdoms and commonwealths of righteousness; wise, honest and stern occupants of the bench of Justice, in the face of dangers many and most appalling, dared to utter decisions because they were just and right, and turned the tide that was drifting toward anarchy and ruin; but the results of their potent and benevolent activities were not equal to the far-reaching blessings to humanity wrought by this magic man of science.

He bore a kind and charitable heart, he loved his friends, and did not hate his enemies. When "tried as if by fire," he grew more noble and generous in spirit. His burning desire was to uncover some of the secrets of nature, which, utilized, would lift burdensome afflictions and bring health, peace and comfort to men. Verily, the spirit of the Divine guided him, for he "did justly, loved mercy, and walked humbly with his God."

And so I repeat, those who have closely studied the life and work of Louis Pasteur unhesitatingly proclaim him *the foremost scientist of the nineteenth century.*

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## CARCINOMA OF RECTUM AND SIGMOID.*

By STANLEY H. GRAVES, M. D., Norfolk, Va.

Admitting the wonderful discoveries and advances made for the eradication of cancer during the past several years, it is to be regretted that the reported results on the treatment of carcinoma of the rectum and sigmoid have been more or less disappointing. Hence, cancer of the rectum has grown to be of ever-increasing interest to the proctologist, not only from an operative standpoint, but equally so in regard to the possibility of an early diagnosis, and the application of timely treatment.

Statistics prove quite clearly that carcinoma of the rectum and sigmoid comprise about 4 per cent of all cancers of the body, and that approximately 80 per cent of all intestinal tumors are in the rectum or sigmoid. The principal seats of location of the growths are at the junction of the rectum with the sigmoid, in the rectal ampulla, or in the anal canal. The ratio of incidence in the male and female is about two to one, and while it is sometimes found in persons as young as 11 years of age, the great majority of rectal involvements are found during the cancer age, that is 35 to 50 years.

In a study of the pathology, Maude Slye has rather clearly shown that there are two factors necessary for their production; first the inherited susceptibility, and second, irritation or chronic trauma fitted to induce it. The most common type is the adeno-carcinoma. Of this

*Read at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

there are three varieties of growths,—papilloma, adenoma, and colloid carcinoma. Metastasis, although proven to be a late manifestation, has been estimated to occur in 39 per cent of the cases examined and studied.

Miles describes three points of lymphatic drainage of the rectum:

1st. The downward path, to the perineal skin, ischiorectal fat, and to the external sphincter.

2nd. The lateral spread, to the posterior vaginal wall, the base of the bladder, the base of the broad ligaments, the levators, and to the recto-rectal lymph node.

3rd. The upward spread, to the perineal floor of the pelvis, pelvic meso-colon, para colic lymph nodes, and the nodes at the bifurcation of the left common iliac artery.

Taking into consideration the many ways that carcinoma of the rectum and sigmoid can spread, and metastasize, we can but visualize an unfavorable outlook for the unfortunate victim. It is true in young persons the growth is very malignant, and disseminates very rapidly. Metastasis to the regional lymph nodes, and distant organs may take place while the primary growth is still in an early stage of development; the reverse is the general rule in persons of the "cancer age." On comparison with malignancy in other situations, carcinoma of the rectum and sigmoid proper, until well advanced, metastasize late, and relatively rarely to distant organs.

Reviewing the early symptoms of carcinoma, we may correctly speak of the "silent rectum." This concealment of symptoms is due in part to the large caliber of the affected bowel, but mainly due to the insidious nature of the disease which may produce only minor disturbances or remain almost symptomless for many months, eventually to force the patient to consult his physician for symptoms of severe pain and apparent obstruction.

The most tragic aspect of cancer of the rectum is due to the fact that the diagnosis is usually made on late manifestations; such as constipation; ribbon stools; progressive weakness; loss in weight; cachexia; with metastasis which is a picture of a hopeless case. Therefore, if one wishes to serve well his patient, and in a scientific way, he must see the case early and make his diagnosis long before these late symptoms manifest themselves. Such early symptoms are bloody stools, changed bowel habits, and a mass in the rectum, found in at least 70 per cent of the cases. The Mayo Clinic reports that 26 per cent of their cases of rectal carcinoma had been operated upon for hemorrhoids without a report of a single rectal examination.

It is to be remembered that the train of symptoms enumerated by the patient may not be characteristic of carcinoma alone. Identical symptoms also occur in all other ulcerations of the terminal bowel, along with simple tumors, stricture and other lesions. Therefore, the complainant should receive the benefit of a thorough examination, for it has been shown that the failure to recognize cancer of the rectum early is due not so much to a lack of knowledge, as to a failure in applying at the earliest moment the knowledge we do possess.

To the experienced finger, digital examination may be sufficient, since carcinomatous infiltration is firm, nodular and friable, and should be regarded with suspicion. The use of the procto-sigmoidoscope, and the examination of the stools for occult blood, are next of importance in making the examination. The finger should be pushed up as far as possible, and the upper part of the rectum explored. When there is a doubt as to the cause of the symptoms, and no definite changes from normal have been felt, the proctoscope should be utilized. This instrument should never be passed without a previous digital examination; and never inserted further than the internal sphincter before removing the obturator, and seeing where the point of the instrument is passing. The rectum must be empty and strong cathartics should not be used before the examination is made. X-ray, using the barium enema, should always be made before operative procedure, to determine the upper boundary of the tumor or involvement of the bowel at a higher level.

When a tumor can be felt or seen in the rectum, it may be clearly malignant, or it may have the appearance of an adenoma or papilloma; in this event a piece of the tumor should be removed for examinations. Even though no evidence of malignancy be found, it does not prove that the tumor is not malignant, and a case of this nature should be kept under observation, and examined at frequent intervals, so that any change in its nature may be noted.

When taking the specimen for pathological study, it should be taken near the edge of the growth or ulcer, in order that the healthy epithelium may be shown side by side with the

neoplastic growth. Great care should be exercised in collecting the specimen not to squeeze or crush during removal, nor should the section be cut until properly fixed. When the surgeon insists upon a frozen section to save time, he must be prepared in some cases for an initial non-committal report, and wait for a more definite finding, and until the necessary number of days for the preparation of a paraffin section.

In my service at the Sarah Leigh Hospital, I desire to report a series of twelve cases of carcinoma of the rectum and recto-sigmoid. Their ages varied from thirty-five to seventy-one years; there were nine males, and three females. The train of symptoms enumerated varied from constipation and a sensation that the bowels were not thoroughly emptied, to severe pain with stools containing blood and mucus.

Of this number, five were brought to operation, and seven, on account of advanced age, weakness and metastasis, were given palliative care.

Two involved the ano-rectal area.

Seven the rectal ampulla.

Three the recto-sigmoid.

A preliminary colostomy was performed on three; colostomy and resection at the same time on one; a tube resection on one; abdomino-perineal resection on one; and sacro-perineal resection on two. The convalescence was satisfactory in four, and one was prolonged by fistula, and an abscess around the colostomy. The average stay in the hospital was from six to ten weeks. A check on the progress of these cases revealed that one died in fourteen months after operation; and the second is now living but shows metastasis after six years; the third is now living after seven years and is in perfect health, and the colostomy is functioning satisfactorily. The longevity of the others varied from eighteen months to two years.

Treatment may be classified under two main heads, surgical and palliative. Since it has been clearly established that in the beginning carcinoma is localized, radical excision appears to be the best prospect for a complete cure. Palliative treatment is distinctly indicated in all inoperable cases, and where operation has been refused, and in others of advanced age.

For surgery to offer a fair prospect of cure, a liberal portion of the bowel must be removed above and below the tumor together with the tissues in the area of the lymphatic spread. Operability also varies with different surgeons in accordance with their selection of cases, experience and skill.

Rankin points out four factors that should guide you in determining the operative risk in carcinoma of the rectum. First, distant metastasis; second, diffuse lymphatic involvement; third, fixation of the tumor to adjacent vital organs; fourth, the pathologic classification of the growth according to Broders. Having reached a conclusion, from a careful study of these four controlling factors, that the patient is an operative case with a fair chance of success, you will be further confronted with the necessity of determining what type of operation is most suitable for the individual patient.

The choice of operation should be governed by the age of the patient, his general physical condition, and by the location and extent of the growth.

Perineal excision is indicated for neoplasms situated in the lower four inches of the rectum or at the anus.

Sacral excision accomplishes removal of the tumors in the ampulla and upper third of the rectum.

Abdomino-perineal (combined) operation is essential for cancer involving the recto-sigmoid region.

Resection in one or two stages meets the indications for neoplasm in the sigmoid proper. Of course, the ideal operation is complete resection, and the formation of an artificial anus in one stage, but such a procedure is applicable in only a small group of early cases in which obstruction has not taken place, and when the physical condition of the patient is good.

In cases where the foregoing methods cannot be used, the next best, and only curative measure known to possess any virtue is deep roentgen ray therapy or radio-therapy. The use of radium may be carried out in three ways, as follows: tubes, needles, and seed implantations, and at times it may be found advantageous to combine all three methods. Indeed some of the most signal and beneficial results have been obtained through an associated use of both radium and surgery.

Bear in mind, however, that there is no routine method of treating rectal cancers with radium, nor is there any uniform dose applicable in all cases. You must be guided by the location, the extent and degree of malignancy. The type of radium application suitable for rectal growths must be capable of exerting sat-

XUM

isfactory influence upon the tissues, exactly as when applied to tumors in other parts of the body. Then too, these applications must lend themselves to an uniform and adequate irradiation of all malignant cells in these inaccessible tumors. At the same time the application must be so made as not to produce undue reactions.

While a review of the cases treated by irradiations up to date has only shown a limited field of usefulness, the results obtained prove beyond contradiction that it is worth while, and much benefit has been derived from its use. Especially in the class of cases who ultimately must die from the disease, great relief has been afforded for many months, and even years, by palliating the symptoms, and making the declining days more bearable. If perseverance and work are carried forward, this wonderful agent may bring showers of blessings to mankind as the technique improves.

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*Sarah Leigh Clinic.*

## X-RAY IN COMMUNITIES REMOVED FROM MEDICAL CENTERS.*

By JOHN W. ROBERTSON, M. D, Onancock, Va.

Is X-ray for diagnosis justifiable in the smaller communities removed from medical centers? Is there a necessary bridge connecting the general practitioner with the full time X-ray specialist in centers of medical education? As a general practitioner of twenty-one years' standing, who has done X-ray work for some ten years as a semi-specialty associated with my general practice, I am convinced there is a necessary gap to be filled in those sections removed from medical centers. I would preface my remarks with the statement that no general practitioner has sufficient clinical material in his own private practice alone to justify either the financial outlay, nor the variety of cases necessary to supply that experience which is necessary in the interpretation of the films. It is only through the cooperation and encouragement of practically every one of you that I have been enabled to carry on. For this cooperation and encouragement I am deeply appreciative.

In the short time allotted to me I desire to make a quick trip through the different phases of "X-ray for Diagnosis" and to illustrate each phase with appropriate films. Naturally I shall have to cut corners.

The first and probably most frequent aspect should come under Injuries. In these days of increased traffic and industrial expansion, it is simply appalling the number of accidents which each individual physician sees. When more or less centralized as in X-ray laboratories and hospitals, it is even more apparent. In fact, physicians are becoming more or less "accident minded" and often view with inward misgivings that which to the laity appears innocent sport, yet potentially an accident from the physician's standpoint. But who of us has ever gotten over that peculiar tugging at our heart strings when a poor child is rushed to us mangled? Accidents like most illnesses are seasonal. Most shootings and cuttings are early Sunday morning after a Saturday night carousal. I have often noticed that a great many industrial accidents occur on Monday. Is it due to clumsiness incident to having been out of employment since Saturday noon? As an interne, it was particularly noticeable that there was an influx of needles in fingers and lacerated hands on Monday. The time of day has a great bearing. The period of children going to and fro from school and just before supper when every one is hurrying home is a particularly dangerous one. Sunday afternoon is a favorite one for auto accidents. Each sleety period brings its quota of fractures with clock-like precision. Self-starters on cars have greatly lessened the Colles' fracture, while one of my accident series occurred in church where a girl dislocated her jaw while eating an apple.

*Read before the Physicians' Journal Club of the Eastern Shore of Virginia, at its monthly meeting held in the Northampton-Accomack Memorial Hospital, March 11, 1930.

The degree of head injuries is often among the most difficult to diagnose, ranging from fine fractures or cracks to complete driving in of portions of both tables of the skull and the loss of considerable brain tissue. Frequent or chronic headaches are often found to be caused by sinus involvement which was unsuspected until shown by X-ray. I have in mind numerous cases of arthritis which, although having apparently beautiful teeth, yet by X-ray showed either abscess or submerged roots which were not suspected as being present, the removal of which was followed by complete clearing up of the arthritis. Acute mastoiditis has been picked up and just recently there was a double mastoiditis which came to operation and checked beautifully with the X-rays. Spine injuries are more frequent than would be suspected, numerous old healed lesions have been detected, while recently there was admitted into the Northampton-Accomack Memorial Hospital a case with dislocation and fracture of the axis and atlas.

I remember one night a Negro was brought to my office with a bullet wound in his neck with a history of having been shot from a level. He was extremely shocked and apparently moribund. However, after stimulants and morphia and atropine were administered, he rallied and I hurriedly X-rayed him from his neck to his abdomen, as he complained of severe pain in his abdomen. I did not see the bullet but the next day after having sent him to the hospital I again X-rayed him and found that the bullet was in the only quarter inch of his anatomy which I had failed to cover, namely, in a portion of his lung. He developed both emphysema and empyema and in due course of time his empyema was drained. It was noticed that he also drained some turnip soup from the empyema wound. After giving him a barium meal, that also was traced through his lung and out the empyema opening. He had been shot from above, the bullet had traversed the esophagus, through and into the lung and with the consequent mediastinal abscess and empyema. He died after several weeks. The wonder is he lasted that long with the mediastinal abscess.

Early tuberculosis of the lungs is very often a matter of personal interpretation, especially in borderline cases, but an X-ray is to be desired and is especially helpful in checking up on the progress of the disease. The cooperation of the State examiners holding chest clinics, has been especially helpful and has afforded a good opportunity for checking the clinical as compared with X-ray findings. Subsequent checking with the State Sanatoria has also been of invaluable aid, notably with Dr. J. B. Nicholls, of Catawba Sanatorium and with Dr. Harper.

It is interesting to note heart enlargements, also aneurysms of the aorta. The fluoroscope is especially helpful in the latter. Two of my cases in particular were recently explained when aneurysm was demonstrated. I must confess that clinically I am weak on detecting aneurysm but when you see it with the fluoroscope you are greatly enlightened.

While on the subject of heart and lungs, I will mention a case which I recently had in which there was a spontaneous and complete collapse of the left lung; the heart was completely shoved over to the right, so much so that on first sight it would appear the film was simply reversed from a normal. It was interesting to watch under the fluoroscope and by films the gradual return to normal. I hope in the future to report this case more in detail.

Carman[1], late of the Mayo Clinic, said—"The examination of the stomach has become one of the most important developments in X-ray work." He also quotes Mayo[2] that "only one in ten with gastric symptoms has a gastric lesion," the rest are due to "extrinsic conditions." This would remind us that although an X-ray is strongly to be advocated in obscure gastric conditions, yet we must not be surprised to find a great many of them negative by X-ray. The study of the duodenal cap is a specialty in itself. A most outstanding work in this connection has been reported by Dr. Joseph Diamond,[3-4] of New York City, under whom it was my pleasure to have had a short intensive course in interpretation. He has beautifully demonstrated the duodenal niche in duodenal ulcers after administering tincture of belladonna previous to X-raying. X-ray is not only valuable in demonstrating carcinoma of the stomach, but also aids in determining whether by its location it is operable or not. Chronic appendicitis has been demonstrated in several of my series which were confirmed by operation. Kidney and bladder stones are demonstrable if they contain lime salts, but uric acid stones do not show. As-

sociated with cystoscopic examinations, instillation of solution of sodium iodide outlines the pelvis of the kidney and the ureters and enables one to detect pathology in the urinary tract which cannot be confirmed in any other manner. (N. B. Since the above was written there is now an intravenous substance on the market, Uroselectan, which enables one to outline without cystoscopy.) Likewise they rule out suspicious shadows which simulate stones but are found to be extraneous to the urinary tract. Gall-stones are likewise more demonstrable if they contain lime salts. The oral administration of special dye materials and the outlining of the gall-bladder is one of the outstanding radiological discoveries of a decade. (Uroselectan bids fair also to become popular, i. e., for the urinary tract.)

Foreign bodies in the upper air passages and lungs are more frequent than would be supposed. I have had a series of eight (8) cases, among which was my own little girl, who have aspirated foreign bodies in their upper air passages. Briefly, they give a history of having choked, possibly for only a few moments, some becoming blue, others apparently choking. Very shortly they become croupy, develop fever, a peculiar brassy cough, and finally pneumonia, if the offending matter is not removed. My cases have included portions of apple, peanut, false teeth, tooth paste cap, etc. Transparent objects, such as peanuts or apple, do not show by X-ray, but there is a certain delay in the air entering the affected side which is characteristic of foreign bodies in the bronchus. Professors Chevalier Jackson and Gabriel Tucker, of Philadelphia, removed the foreign bodies in each instance. I will also add that organic matter such as an oily peanut or the skin of apples does more harm than metal objects, due, as I understand, to a chemical or decomposing irritation of the organic material. I can picture in my mind a colored child who was seen by three of us some years ago. It presented the appearance of a possible diphtheria of the windpipe. However, all cultures were negative and the antitoxin did no good. The child continued the brassy cough for some weeks. I am not sure, but think it recovered after a long illness. I am quite sure now in the light of my subsequent experience that the child had a foreign body in its air passages, and that an X-ray and possibly a bronchoscopic examination would have revealed the same.

In conclusion it is my impression that X-rays are of inestimable value to the general practitioner. They are not infallible and should always be interpreted in the light of the clinical history.

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## MEDICAL SUPERVISION OF AIRPLANE PILOTS.*

By NELSON MERCER, M. D., Richmond, Va.
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Aviation medicine is a specialty of ever-increasing importance due to the demand for safety in flying of those who operate and patronize all types of aircraft.

Especially is this appreciated when we consider that within the fiscal year 1930, 43,902 physical examinations were given airplane pilots of all classes by the Aeronautics Branch of the Department of Commerce. Of 22,606 original examinations of students, 1,435 were disqualified. Of 12,402 pilots and students re-examined, 100 were disqualified. And among 6,193 re-examinations for a higher grade of license, 19 were eliminated. A total of 81,349 examinations have been given since 1926[1].

In the United States there are now over 14,500 licensed pilots, and over 7,000 licensed planes. There were 18,700,000 airplane miles flown in 1926, while in 1929 there were 125,000,000. Miles of airways in operation in 1926 totalled 8,404, and in 1929, 36,000. Mail carried in 1926 amounted to 810,000 pounds, and in 1929, 7,700,000 pounds[2].

Moreover, as statistics show that about 60 per cent of all aircraft accidents are due to some deficiency of the pilot, medical examiners must be on the alert to eliminate physically unfit and emotionally unstable applicants for pilots' licenses.

Physical standards for airplane pilots, as specified by the Aeronautics Branch, are the

*Read by title at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

result of over 15 years of research and practical experience in flying, and are universally accepted. Two general classes of physical standards are recognized, one for transport and military pilots, and one for private and sport pilots. Applicants for student permits have to pass a satisfactory physical examination before they are allowed to begin their flying instruction under licensed pilots of transport grade.

The Air Commerce Regulations require a complete annual examination for all classes of flyers and, in addition, a semi-annual physical check of transport and limited commercial pilots (the passenger carrying grades) in order to retain their licenses. Also each pilot who is injured in a crash has to be certified as physically and emotionally sound before he can resume flying. Several large air transport companies employ flight surgeons who examine all of their pilots monthly, and keep them under constant medical supervision, thus being able to detect any physical or emotional defect when it first appears and thereby avoiding fatal accidents.

A brief summary of the physical requirements for airplane pilots is all that the time allotted to this paper will permit. These may be divided into six main groups as follows: general physical examination; nervous system; eyes; ear, nose and throat; equilibrium; and estimate of aeronautical adaptability.

The general physical examination includes medical history, heart, lungs, abdominal viscera, endocrine system, genito-urinary system, and mobility of joints and muscles. An ankylosed elbow may interfere with working the stabilizer or handling the stick, while ankylosis of an ankle or knee may prevent proper use of the rudder or brake. A hernia may become strangulated and therefore is cause for rejection. Acute diseases are disqualifying until they subside. Chronic respiratory conditions such as asthma, emphysema, bronchitis, tuberculosis, etc., disqualify because they mean decreased resistance and decreased lung function, and may become suddenly disabling, as in the case of asthma. Syphilis is disqualifying because of the danger of cerebrospinal or cardiovascular complications developing. Functional disorders, such as gastric neuroses, must be considered in the determination of nervous stability.

According to Dr. L. H. Bauer,[2] Medical Director, Aeronautics Branch, and an authority on aviation medicine, the nervous system is one of the two most important parts of the examination of flyers. Psychotics and epileptics, and those with psychoneurotic and epileptoid equivalents must be found and eliminated. A detailed personality study is made into the entire past experience of the applicant with a view to disqualifying the emotionally unstable, the person who goes to pieces in an emergency, and the individual who reacts too slowly to avoid approaching disaster[3]. By means of the general physical and the nervous system examinations, "staleness," otherwise known as the effort syndrome or neuro-circulatory asthenia, is discovered. This may be manifested by fainting while flying. History of amnesia, whether the result of traumatism or following periods of alcoholic intoxication, should be carefully elicited from the applicant, and if it exists he should be disqualified.

The examination of the eyes is very important from several standpoints. The most important visual function, according to Bauer,[2] is the ability to judge distance correctly as this is absolutely necessary in formation flying, taking off, and in landing, where distance must be judged from the ground, trees, poles, wires, buildings, and other planes. This depth perception is a binocular function and good stereoscopic vision is required. Normal vision without correction is essential in the military and passenger carrying pilot, but minor defects of vision, if corrected to normal, may be permitted in private and student pilots, although it is poor policy to allow anyone to fly who is totally dependent upon correction for good vision. The airplane pilot must have good peripheral as well as good central vision, and if he wears glasses under his goggles his field of vision is much restricted and is similar to a horse wearing a blinder. Frequently a pilot has to remove his goggles (made with corrective lenses) when they are smeared with oil or become misted, and without normal vision he is in a dangerous way. Good color sense is required, for the pilot must be able to detect navigating, airdrome, and signal lights, colored signal panels, and the shades of green and brown on his maps indicate the terrain over which he is flying. Ability to accommodate quickly from far to near vision is needed to read his map and instrument board and to observe objects on the ground and in the air. Abnormalities of the fundus and media are found with the ophthalmoscope. Ocular muscle balance is also considered, for moderate degrees of heterophoria

interfere with judgment of distance and cause headaches which result in carelessness and inattention.

Under conditions of the ear, nose and throat, hearing sufficient to detect radio signals and carry on ordinary conversation is required if no disease exists. Diseases of the ear, mastoid, nose, and throat lower resistance and are liable to become acute if the pilot is exposed to cold and fatigue, and are disqualifying. Nasal and throat obstructions should be corrected as they interfere with breathing, and deep breathing is imperative in high altitudes.

Equilibrium is determined by the Romberg, modified Romberg, the gait, and self-balancing tests, and to quote Bauer, "anyone who can perform all of these tests satisfactorily can have no lesion in his proprio-ceptive mechanism worthy of note." The Barany tests have been discontinued as unnecessary. Equilibrium is maintained by sensations received from the eyes, the vestibular apparatus, muscles, joints, viscera, and tactile sensations. Flyers depend on their eyes to maintain their plane level, and when the horizon is gone, as in a fog or above the clouds, they are helpless without instruments.

Aeronautical adaptability of an applicant is determined by the results of the whole examination, the personality study in particular[3]. Bauer states that not even everyone physically normal can learn to fly. However, the more thorough the examination of an applicant the better able are we to judge his adaptability for flying. Reaction time is of great importance, but further work must be done on the Reid and Ruggles apparatus before definite conclusions can be reached as to their practical value.

Experience during the World War taught the allied armies that numerous flying casualties resulted from defects overlooked by the ordinary physical examination, hence a more rigid standard was then adopted with better results, and is now considered essential to safe flying.

Cooper[4] and Bauer have recently studied the progress made by over 9,000 student pilots with and without physical defects, including those without previous training and those who had advanced to private or higher grades or had thirteen months in which to do so. They conclude that a man's ability to learn to fly decreases directly with the increased seriousness of his physical defects.

The same investigators next studied all civil aircraft accidents in physically normal and physically defective licensed pilots, and they found that the accident rate was much higher among the defective group during 1927, 1928, and 1929. The 87 per cent of normal pilots produced only 81 per cent of accidents, while the 13 per cent of defective pilots caused 19 per cent of accidents. The fatality rate for the three years was 1.55 per cent in normal pilots, and 2.36 per cent in the abnormal. These studies demonstrate that the physical standards are not too high for civilian pilots when the safety of many lives is considered.

Many facts of interest to medical examiners were discovered by this study of thousands of physical examinations, and some of the most important follow.

Systolic blood pressure in applicants 18 to 25 years of age is often above the normal due to fear of the first examination and nervousness at the time, yet nothing could be found to explain the cause of the nervousness. On subsequent examinations these young people showed normal pressures. It was found that a systolic pressure of 100 mm. or less was a poorer risk than a moderately high one, as these persons seemed to be of the fainting or asthenic type. Reaction of blood pressure to exercise is an important test, for normally the systolic should rise and the diastolic remain constant, while if the systolic falls after exercise, vasomotor instability is indicated. Return of the pulse rate after exercise, to the rate it was before exercise, is also of more importance than the rate itself. A systolic murmur without other evidence of cardiac insufficiency may be disregarded.

As a result of the Department of Commerce annual and semi-annual examinations of civilian pilots, hundreds of physical defects have been corrected, and the health of many persons has been benefited and preserved to safe flying. "Staleness," or neuro-circulatory asthenia, results from fatigue due to too much flying, exposure to extremes of weather, and stress of mind and body, and the medical examiner should prevent this condition among pilots by insisting on proper rest, regular habits, and exercise. Bauer believes that the Aeronautics Branch has prevented many crashes by eliminating physically defective applicants on the first examination, and defective pilots on the routine examinations, the rest being up to the aircraft companies who should enforce constant medical supervision. The extreme importance of such supervision is shown by the fact that only 7

per cent of all air accidents occurred in legitimate transport flying by licensed pilots in licensed planes over regular airways with landing fields and lights. One fatality to each 1,042,000 miles flown in air transport is recorded, while one large company recently reported 3,000,000 miles flown without a death.

Medical examiners are also concerned with the effects of high altitude and high speed on pilots[5]. Flying over mountains is often necessary, while combat, reconnaissance, and photographic work usually require very high altitudes, 30,000 feet being reached in formation flying on the West Coast recently in the Air Corps maneuvers. Deeper respirations and greater volume of breathing per minute cause increased aeration of the blood. The heart beats faster, and the systolic and diastolic blood pressure may rise or fall, or one or both may break sharply, resulting in fainting. The average person loses consciousness at about 25,000 feet and, to prevent this, oxygen should always be used above 18,000 feet.

The record for high speed in an airplane is 365 miles an hour, and yet as this was made in straight ahead flying, little or no harmful effect was noted by the pilot. But if turns at high speed are made, the centrifugal force produces cerebral anemia and unconsciousness. Retinal hemorrhages and possible brain injury have resulted from a pilot pulling his plane up after a dive at 250 miles an hour.

### Summary

It is evident from the above facts that the special physical examination, as set forth by the Department of Commerce, is absolutely necessary before anyone should start flying instruction, and also that constant medical supervision is needed to keep pilots in the best possible condition to withstand the effects of high speed, high altitude, intense cold, violent winds, marked glare, continuous disturbance of equilibrium, and fatigue due to physical, mental, and nervous stress.

Safety in flying, to a very large extent, depends upon the physical perfection, mental alertness, and nervous stability of the pilot, and, therefore, we, as their medical guardians, must select only those who conform to the prescribed standards, and see that they keep themselves fit to master any emergency in the sky.


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1100 *West Franklin Street.*

## HEART DISEASE AS A SURGICAL RISK.*

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The subject involves a consideration of the heart and of the proposed surgery. Knowledge of the condition of the heart is obtained through the history, symptoms and signs, the electrocardiogram, the X-ray, and from circulatory features other than the strictly cardiac.

The points in the history that should arrest our attention are cardiac pain or pulmonary edema, dyspnea on exertion, rheumatic fever and syphilis.

The symptoms and signs that are of special importance are dyspnea, cough, cyanosis, rales at the base of the lungs, a palpable liver and edema; on direct cardiac examination, displacement of the maximum apex impulse, abnormality of the heart sounds, murmurs, more especially diastolic murmurs, friction rub, increased cardiac dulness with obscurity of the heart sounds, and in the pulse an abnormal rate, rhythm, volume, or character in the sense of the length of time it is sustained.

The more common electrocardiographic findings of significance are auricular fibrillation, heart block, right ventricular preponderance, and the changes in the neighborhood of the T-wave indicative of myocardial degeneration or coronary thrombosis.

The X-ray is useful chiefly in determining the size of the heart and aorta, and the presence of pericardial effusion or adhesions.

In the circulatory system beyond the heart itself, the recognition of aneurysm, the degree of arteriosclerosis, arterial blood pressure, especially diastolic, venous blood pressure doubtless if it were better understood, and the

*Read as part of a symposium on Heart Disease before the Richmond (Va.) Academy of Medicine, September 23, 1930.

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functional condition of the kidneys are all so intimately connected with the heart as an element of surgical risk that they cannot be left out of account.

Out of this mass of available data and others not mentioned, a working idea is to be reached as to the capacity of the heart to stand surgical procedure. To keep the most important in the foreground and employing synthesis to yield symptom complexes, we arrive at the recognition of true cardiac pain, pulmonary edema or broken compensation, gross enlargement, mitral stenosis, aortic dilatation or aortic valvular insufficiency, and plain cardiographic evidence of myocardial degeneration.

The American Heart Association has urged that a diagnosis of heart disease shall include an understanding of etiology, pathological anatomy and physiology, and functional capacity.

As unsuited to stand the strain of surgery, etiologically speaking, it is the heart congenitally defective, or affected by bacteria, the treponema pallidum, the rheumatic toxin, an overactive thyroid gland, or the wear and tear of life.

Anatomically speaking, it is the degenerated heart muscle, the enlarged heart, the heart with a blood supply impaired by coronary disease, and the heart with seriously damaged valves.

Physiologically speaking, it is the heart with inadequate nutrition, with chambers that no longer coordinate, with conduction fibres that imperfectly convey the auricular impulses to the ventricle, less frequently one with a fault of ventricular contraction *per se;* some defect of synchrony or sequence, or of ventricular force.

Functionally speaking, it is the heart which has suffered anatomical and physiological impairment to make it, as a pump, insufficient to meet the demands of the circulation plus a surgical load.

The practicing physician does not consciously pursue the train of thought outlined. These particularities he laboriously acquired in lecture halls and clinic, reproduced them in answer to examination questions, and later in a rougher school of experience, fused and shaped them into a relatively few working concepts.

The loudness of a heart murmur or the rate of the heart beat are not in themselves sufficient to determine the surgical risk.

The patient with a history of angina pectoris, pulmonary edema or previous broken compensation, with syphilitic aortitis, rheumatic mitral stenosis or aortic leak, cardiac hypertrophy, the "E K G" of myocardial degeneration; the wheezy, dyspneic, cyanosed or bloated individual; inelastic arteries, high blood pressure or pressure that should be higher but for a failing heart muscle: the elderly, the mere fact of having lived long and become worn, these we know are not favorable subjects for surgery.

This is the side of the question with which the physician is most concerned. There is the other side which taxes surgical judgment. The questions involved are as many and as nice as the heart itself presents. What is the purpose and character of the proposed operation? Is it elective or imperative? If imperative can it wait on an attempt to improve the heart condition by rest, diet, and medication? Can the hazard be lessened by a judicious selection of the anesthetic? If the operation is successfully performed, will it accomplish not only its primary object, but perhaps benefit or protect the heart itself for the future? What are the patient's sufferings, his work, and his responsibilities? The answer to such questions cannot be put in textbooks and can come only from surgical experience. A mole may be removed extemporaneously; a perineal repair may be postponed till after the menopause: and an abdominal emergency may not wait on the surgeon's convenience.

The variety in heart disease and the gradations in surgical undertakings afford a series of combinations approaching infinity. Our subject, then, is one involving relative values. We can hardly hope to do more than arrive at a reasonable attitude. This can best be done by illustrations.

If a rheumatic endocarditis is recognized, given even a history of decompensation, and the tonsils are manifestly the site of chronic infection, the risk usually should be taken and the tonsils removed to prevent further damage to valves, myocardium or pericardium and the other sequelae of tonsillar infection. But the time of election would not be during an acute exacerbation of tonsillitis, and much of the

risk may often be avoided by appropriate preoperative treatment and postoperative care.

The pain of coronary thrombosis, with its slight fever and leucocytosis, may be mistaken for an abdominal condition amenable to surgery and a major operation needlessly done at a peculiarly unfavorable time. On the other hand, an impaired circulation may require as the most promising chance for improvement the removal of a septic gall-bladder.

A rapid heart, not excepting auricular fibrillation, if thyrogenic in origin, represents one of the clearest instances in which boldness in surgical judgment offers the patient the maximum of relief, provided again the time of election for operation is carefully considered and the full benefit from Lugol's solution and rest is first obtained.

The subject of each of the three examples appears to have found his way to the operating room. This is not to say, when in doubt, operate. An operative death is no credit to the surgeon and no advantage to the patient. Most people cling to life and prefer to tolerate a good deal of illness rather than take an undue risk of premature death. But given a surgeon with a due sense of the time element, he may usually be relied on, and his medical associate with him, to avoid operation altogether if the period of preliminary treatment does not reveal a reasonably safe risk. Heart disease as a surgical risk might well be held up as a red flag to a thoughtless or ignorant surgeon, but it would do little good. As for the capable and conscientious surgeon, the medical associate finds himself called upon to lend moral support in sharing the responsibility for action more often than he is needed to restrain a too-great daring.

There is, then, no formula for the expression of heart disease as a surgical risk. Whatever may be said of it by way of systematic discussion, the practice of it can rest on nothing more restricted than sound clinical judgment. The question often takes the scope of a philosophy of life and death. The surgeon is consciously or unconsciously guided by his own philosophy, but all his work concerns some individual. And when the gain and the risk of surgery are evenly balanced, his advice must be a resultant of his surgical wisdom and his human sympathy.

## CARDIAC IRREGULARITIES.*

By J. MORRISON HUTCHESON, M. D., Richmond, Va.

Irregular action of the heart may or may not be of serious significance; hence it is desirable that its various forms be clearly differentiated. For this purpose the electrocardiograph furnishes the easiest and most accurate means, but the instrument is not always accessible nor is it necessary in the majority of cases. We are now at the point where most disorders of rhythm can be readily analyzed and classified by the careful clinician from simple bedside examination.

In order to understand any form of irregularity it is necessary to have in mind a clear conception of the essential features of the regular heart beat. The contraction impulse begins at the sino-auricular node, sometimes called the pacemaker, and spreads through the auricle whence it reaches the ventricle by the auriculoventricular bundle or bundle of His. The pacemaker emits impulses at rates which average from 70 to 80 per minute and, the separate beats being evenly spaced, the systoles follow each other in orderly sequence or rhythm. The pacemaker is influenced by the vagus, which normally exerts an inhibitory or slowing effect, and also by accelerator fibers which may increase its rate.

Disorders of cardiac rhythm are due either to disturbance of impulse formation or to interference with impulse conduction along the usual pathways in the heart muscle. The elecrocardiograph explains such disorders clearly as it is a record of the course of the contraction wave from its origin to its destination. Clinical interpretation, however, is facilitated by classifying the disturbances commonly encountered and studying the physical signs presented by each.

In this paper I shall discuss briefly seven types of irregularity which are commonly seen. Most of these may be easily recognized from clinical examination, while any one may be suspected provided its essential features are kept in mind. Other types of arrhythmia do occur, but comparatively rarely, and also combinations of the commoner ones that can only be successfully analyzed by graphic methods.

1. Abnormal Sinus Rhythms. These are simple tachycardia, simple bradycardia and

*Read as a part of a symposium on Heart disease before the Richmond (Va.) Academy of Medicine, September 23, 1930.

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phasic arrhythmia, commonly called sinus or youthful arrhythmia.

Simple tachycardia results from various influences affecting the pacemaker through its nerve connections. Exercise, fever, emotion, tuberculosis, hyperthyroidism and atropine are common causes, as is myocardial weakness. Acceleration begins and ends gradually. The electrocardiogram shows normal complexes. Treatment, if required at all, depends upon the underlying condition.

Simple bradycardia is much less frequent than tachycardia and results from increased vagus tone. It occurs in the so-called vagotonic individuals, in patients on prolonged rest, during convalescence from infectious diseases and from affections of the vagus center in the medulla. It is to be differentiated from the several forms of heart block, but the rate in simple bradycardia is rarely slow enough to make this distinction difficult. The electrocardiogram shows normal complexes and atropine increases the heart rate by diminishing vagus tone.

Phasic arrhythmia is most marked in children but may appear at any age. As a rule there is an increase in heart rate during inspiration and a decrease during expiration, but the reverse may be seen. The phenomenon is exaggerated by deep breathing or by holding a deep breath,—a useful diagnostic point. At times the irregularity is so pronounced as to cause it to be mistaken for some serious disturbance. Herein lies its only clinical importance. It disappears on mild exercise or after the administration of atropine.

II. Premature Contraction or Extrasystole. These arise from irritable foci outside the pacemaker and, provided the adjacent muscle is in a receptive state, a contraction breaks in on the normal cardiac cycle. At times they may be so interpolated between normal beats as to resemble some sort of rhythm, for example, coupled or tripled beats where extrasystoles replace every second or third cardiac contraction. Auscultation of the heart usually reveals the faint extrasystole, following shortly after the normal sound, and succeeded by a longer pause and then the normal beat. Palpation of the pulse may show the weak extra beat, but as a rule only the long pause is made out in this way. By listening to the heart one can usually identify extrasystole without difficulty. The electrocardiogram explains the disorder and indicates its point of origin.

Extrasystole is in itself of no diagnostic or prognostic significance. At it often occurs in diseased hearts, its presence indicates careful cardiac study. It apparently results from nervous and toxic causes and may be produced by digitalization. It disappears when the heart rate becomes rapid. Sensitive individuals not infrequently become uncomfortably aware of extrasystole and treatment is necessary. Reassurance and sedatives as a rule suffice, though they influence the irregularity little or none. Many remedies have been used and thought to be effective, though none is of undoubted value. Quinine and quinidin seem to control certain cases. Wiggers suggests potassium iodide. The writer is at present interested in the effect of cactus which appears to be definite. Digitalis may aggravate the condition, but the presence of extrasystole does not forbid digitalis administration when it is properly indicated.

III. Auricular Fibrillation. Of the cardiac arrhythmias, auricular fibrillation is one of the most frequent and the most important from the diagnostic and therapeutic standpoint. It is usually associated with decompensation or precedes it by a brief interval, though cases are not rare in which fibrillation is compatible over years with reasonably good cardiac function. It occurs in brief paroxysms of minutes to days or it may be permanent.

At present fibrillation is believed to be due to a self-perpetuating ring of excitation in the auricle, the so-called circus movement. As only a small number of impulses from the fibrillating auricle traverse the bundle and reach the ventricle, the ventricular rate may be considered to depend upon the degree of block in the junctional tissues. As many of these impulses reach the ventricle while it is partially refractory, incomplete beats that do not reach the radial pulse result,—the so-called pulse deficit.

The clinical characteristics of auricular fibrillation are complete absence of rhythm and pulse deficit. When the heart rate is rapid, the disorder is striking and can hardly be misunderstood. Occasionally the pulse deficit is so great as to show a very slow pulse with a very rapid heart. When the heart rate is slow, the condition may escape detection or be confused

with extrasystole. When there is doubt, fibrillation is usually present. Increasing the heart rate brings out this irregularity more clearly while it tends to abolish premature contraction.

Auricular fibrillation with rates above 100 per minute calls for treatment. It is usually accompanied by congestive failure and digitalis gives brilliant results. The drug acts by increasing the degree of auriculo-ventricular block and lessening the number of impulses that reach the ventricle. Consequently the ventricular rate is slowed, there are fewer incomplete contractions with lessened pulse deficit and the heart as a rule regains compensation accordingly. Digitalis does not abolish fibrillation but may serve to control the ventricular rate for long periods. In a minority of cases, without congestive failure or other grave myocardial disorder, fibrillation may be advantageously treated by quinidin which, by its depressant action, abolishes fibrillation and restores normal rhythm.

IV. Auricular Flutter. This disorder depends upon essentially the same mechanism as fibrillation. The circus movements, however, follow a wider arc, thus allowing the refractory period to pass and causing regular instead of irregular auricular impulses. The auricle contracts at from 200 to 400 per minute and the ventricle responds to every second or third beat. Auricular flutter is closely allied to fibrillation but much less frequent. It is not unusual to find the arrhythmia changing from one to the other and the so-called impure flutter is often hard to classify. Like fibrillation, flutter may appear in paroxysms or it may be permanent and it usually means serious heart disease.

When a regular heart action persists at rates of 120 to 180, uninfluenced by rest or exercise, flutter may be suspected. Sometimes the ventricular rate is normal and here the disturbance in the auricle could only be detected if its rapid contractions were transmitted to the veins of the neck. As a rule, flutter can only be diagnosed with certainty by the polygram or electrocardiogram.

As in fibrillation, flutter requires treatment when the rate is rapid. Digitalization changes it to fibrillation and sometimes normal rhythm ensues. Quinidin often abolishes it but should be used with the same restrictions as in fibrillation.

V. Paroxysmal Tachycardia. The onset and termination are abrupt, the heart almost or entirely regular, the rate from 180 to 220. Patients state that the heart seems to stand still and then beats at a terrific speed, returning suddenly, after minutes, hours, or days, to its normal rate. In most cases the disorder occurs in hearts not otherwise diseased and is not dangerous. Some patients are pale, breathless and prostrated during the attack, while others suffer little or no discomfort.

Paroxysms of tachycardia are believed to arise from irritable foci, either in the auricle, ventricle or junctional tissue, producing a series of rapidly recurring extrasystoles. Auricular tachycardia is the most common and the most benign. Paroxysms of ventricular tachycardia usually complicate infarct of the ventricle and may cause rapid heart failure.

Treatment designed to terminate the attack consists of various forms of vagal and orbital pressure, changes of posture, swallowing, or holding a deep breath. Full digitalization has been recommended. In my hands quinidin has seemed most useful both in the attack and as a prophylactic.

VI. Heart Block. At any point in the course of the excitation wave delay or interference may occur. Hence we may by appropriate means recognize (a) sino-auricular block, (b) auriculo-ventricular block, (c) bundle branch block, and (d) arborization block. In sino-auricular block, impulses are suppressed before they reach the auricle, causing the dropping of single beats. The condition is usually the result of increased vagal tone, is often caused by digitalis and abolished by atropine. It is of little clinical significance and can only be recognized with certainty by graphic means. The term "heart block" usually refers to interference in the bundle of His. This may be a delay in conduction time, with or without the passage of all impulses to the ventricle, or there may be complete blocking of all impulses, the ventricle assuming its independent slow rate.

Partial block or increased conduction time may occur in acute infections, particularly rheumatic fever, diphtheria, pneumonia and influenza. It is also caused by digitalis and doubtless is frequently aggravated by this drug in the diseases referred to. Clinically it may show no signs, there may be occasional dropped beats, or beats may be dropped at

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regular intervals. It is difficult to recognize without graphic studies. Partial block, except from digitalis, is practically always a sign of myocardial disease and may be the only objective evidence. This is particularly true in acute infections.

Complete block manifests itself by an abnormally slow rate, usually around 30 per minute, though at times the rate is not slow enough to be diagnostic. It is usually seen in cardiosclerosis and may result from syphilis, though this relationship has probably been over-emphasized. Though complete heart block may be compatible with years of fairly comfortable life, it is usually found in grave myocardial disease and the prognosis is poor.

When a high degree of block obtains with long pauses between beats, unconsciousness or convulsions may occur, the so-called Adams-Stokes seizures. Sudden death may result but is relatively uncommon. Block in the bundle branches or arborizations has no effect on rhythm and need not be considered here.

The treatment of heart block is generally that of the underlying disease. In partial block, digitalis should be used with caution, if at all; in complete block it can do no harm. Atropine may be helpful if there is a vagus factor, which is rarely the case. Where there are attacks of syncope or convulsions, adrenalin may increase the ventricular rate for several hours at a time. Barium chloride given regularly has also been found effective as it induces a sufficient number of extrasystoles in the ventricle to increase its rate materially.

VII. Alternation of the Heart or pulsus alternans is a condition in which the left ventricle beats regularly but with larger and smaller putput at alternate contractions. Its cause is unknown, though experimentally it may be produced by certain poisons. Alternation is a disturbance frequently missed as it cannot be detected by examination of the heart, nor does even careful palpation of the pulse always reveal it. It is brought out best by a pulse tracing, but the most generally useful instrument for its detection is the sphygmomanometer. By slowly releasing pressure after the first beat is heard, a halving of the pulse rate occurs for several millimeters.

When the heart is rapid, alternation is apt to be transient. With a slow heart it tends to persist and is always to be regarded as a sign of grave myocardial deterioration or severe cardiac strain. It is said to result from digitalis poisoning. Alternation is chiefly of interest as a prognostic sign. It requires no special treatment but calls for every possible precaution to protect myocardial function.

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## REPORT OF FOUR CASES OF TUMOR OF THE KIDNEY IN CHILDREN UNDER FIVE YEARS OF AGE.*

By JULIAN L. RAWLS, M. D., F. A. C. S., Norfolk, Va.

Norma Early, age twenty months, admitted to St. Vincent's Hospital, August 23, 1926; discharged August 23, 1926. This baby was apparently a normal baby. At about six months of age her mother noticed that her abdomen was larger than normal and apparently had a mass in it. From then on the mass continued to grow. She was seen by me about six months ago. At that time she had a large irregular mass in her abdomen. The greatest abdominal circumference was nineteen inches. A diagnosis of polycystic kidney, ovarian dermoid or sarcoma was made. An X-ray showed some shadows which were taken to be calcareous changes. After about six months' observation, the tumor was very much larger, the circumference of the abdomen was twenty-three inches and the child had stopped walking and gone back to crawling. It was decided to explore it. On physical examination the heart and lungs were negative. The abdomen was filled by a very large irregular tumor. It seemed to present more on the right side just below the liver; it was hard and had areas that felt cystic. The urinalysis was negative except for an occasional leucocyte. W. B. C. 17,000; SMN. 36 per cent; LMN. 2 per cent; PMN. 59 per cent; Eos. 3 per cent; coagulation time five and one-half minutes; red cells normal.

At operation a large cyst was seen postperitoneal. It was tapped and about 2,000 c.c. of a clear fluid was removed. An attempt was made to remove the sac but it was found to be densely adherent to the ascending colon and the duodenum. The child's condition was reported bad by the anesthetizer so a drain was introduced into the sac and the abdomen closed. She re-acted from the anesthetic but died of shock three hours later. Autopsy showed a tumor lying behind the pancreas,

*Read at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

containing bone and cartilage, apparently sternum and ribs. To this mass were attached several cysts, some containing clear fluid and one containing probably 100 c.c. of thick yellow sebaceous material. The mass was densely adherent to the upper abdominal organs. I am unable to say at this time whether this tumor originated in the right kidney or whether it was a retro-peritoneal teratoma without kidney involvement.

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Leon DeHart, age twelve months, admitted to the Norfolk Protestant Hospital, September 16, 1929, from the King's Daughters' Clinic. The child had been carried to the Clinic because the mother had noticed about ten weeks before that there was a mass in the left side of the abdomen. It had grown rapidly and at the time of admission to the Hospital it practically filled the abdomen. The physical examination was essentially negative except for a bilateral enlargement of the inguinal lymph nodes and the mass which was described as filling up the left side of the abdomen, extending below the umbilicus and two fingers' breadth to the right of the mid-line. It was irregular and was reported as being freely movable. On admission he had a temperature of 103.4°. His urinalysis was negative except for a heavy trace of albumin and amorphous phosphates. It was clear of casts, epithelium, pus cells and blood. His blood picture showed Hgb. 44 per cent; R. B. C. 3,580,000; W. B. C. 32,800; PMN. 86 per cent; LMN. 5 per cent; SMN. 9 per cent. On September 20, 1929, the mass was removed by Dr. Gwathmey. The laboratory report is as follows: Left kidney, 160 x 120 x 80 mm. Weight 1,050 gm. The kidney contained a large tumor mass about the size of a cantaloupe. Renal tissue is spread out over one pole. The tumor tissue is confined for the most part within the kidney capsule but had broken through in several places as a fungoid growth. Most of the tumor tissue was soft, edematous and grayish white. Some parts contained deeply red areas. Microscopic examination: Sections from the more deeply colored areas resemble embryonal renal cortex, i. .e., tubules surrounded by cellular tissue resembling a fibro-sarcoma. However, the tubular structures are very atypical. Few of them have a single layer of high columnar epithelium but most of them are surrounded by a mass of polyhedral cells with round or oval hyperchromatic nuclei. There are many mitoses in these epithelial masses. Around these groups of epithelial cells there is an abundance of embryonal connective tissue, rich in round and oval nuclei, many of which are hyperchromatic. There are fewer mitoses in this tissue than in the epithelial

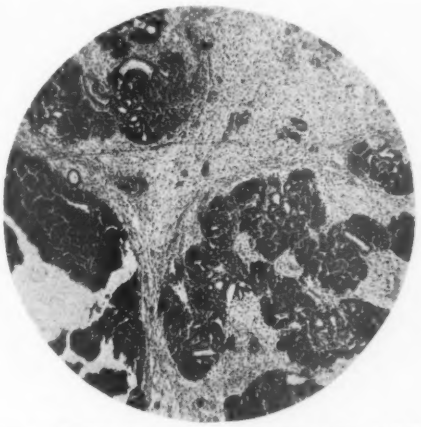

Fig. 1.—Section of tumor removed from Leon DeHart. **Diagnosis:** Adeno-carcinoma. Fibro-sarcoma.

cells. The grayish white portions of the tumor consist largely of this sarcomatous tissue and contain only a few scattered atypical tubules. This is a mixed tumor, adeno-carcinoma and fibro-sarcoma. The child had a reasonably smooth convalescence and was discharged from the Hospital on December 9, 1929, his temperature having been normal for ten days. He was returned to the King's Daughters' Clinic with the statement that it was only a question of time before the growth would re-appear. His general condition improved, he put on weight, his appetite was good and he was apparently in excellent condition until the latter part of December when he began to go down hill. In a short time there was a palpable return of the growth. It was hard, nodular and slowly filled up the entire abdomen. He lost strength as the tumor progressed until for several weeks before his death he could not turn over in bed without assistance. At death he weighed twenty-two pounds, nearly half of which was represented by the tumor.

A post-mortem April 8, 1930, showed a large retro-peritoneal mass, consisting of many cystic areas separated by solid material which had no definite structural entity. There was no evidence of metastasis elsewhere. The liver

XUM

was normal, very little glandular involvement, apparently inflammatory. There was no evidence of involvement in the other kidney.

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Ralph Piner, age three years, admited to St. Vincent's Hospital June 29, 1927, with the following history: Last Tuesday patient fell while running. After this fall he began to complain of pain in abdomen and vomited that night. Mother gave an enema that seemed to give relief. Had cramping pains all night Tuesday and vomited again Wednesday morning; could not retain food. Cramping pains continued through the day Wednesday until his admission in the Hospital about 5 o'clock. Castor oil was given Wednesday morning with no result. His previous history had been negative except for an attack of whooping cough. On admission he had a temperature of 100°, pulse 160, urinalysis negative, W. B. C. 32,000; Polys. 89 per cent. His abdomen was very tense and an irregular mass could be felt in the left side. He was operated on with a diagnosis of intestinal obstruction but no evidence of obstruction was found. He had a large, hard irregular tumor apparently involving the left kidney. He ran a rather high temperature and rapid pulse and was quite sick until July 16, when his temperature dropped to normal. On July 17, 100 mgm. of radium was applied over the growth at different areas for eight hours. He left the Hospital July 18, 1927.

He was re-admitted to the Hospital on August 19, 1927. There had been no material change in the condition of the growth. He still presented a hard tumor filling up the left side of his abdomen from the crest of the ilium and extending well up under the costal arch. His urinalysis was negative, his W. B. C. 13,500; Polys. 81 per cent; R. B. C. 5,050,000; Hgb. 60 per cent. He was operated on the following day and a left nephrectomy done. A large tumor involving the left kidney and left adrenal, adherent to the peritoneum and the mesentery of the sigmoid was found. There were a large number of peritoneal glands, some containing yellowish deposits. The peritoneum along the diaphragm shows evidence of metastasis. The operative time was thirty minutes. He left the table in very poor condition and died eight hours later of surgical shock.

*Pathological Report:* The mass is firm, ovoid, surface smooth, and is covered by a thin capsule that strips easily. It measure 6 x 4½ x 3½ inches. Microscopically the stroma is myxomatous and in it lie nests of small round and spindle cells. *Diagnosis:* Mixed cell sarcoma. (J. A. Wilkins).

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Evelyn Louise Littlejohn, age twenty-three months, admitted to the Norfolk Protestant Hospital February 27, 1930, from the King's Daughters' Clinic, for diagnostic cystoscopic and X-ray study by Dr. C. J. Devine. Her chief complaint was a large mass, first noticed about six months ago, filling up the entire right side of her abdomen and apparently originating in the right kidney. Catheters were introduced to both kidneys. Both catheters dripped clear urine. Intramuscular phthalein

Fig. 2.—Pyelogram of left kidney of Evelyn Littlejohn.

returned from each kidney in about the same time. An X-ray was taken and pyelograms made. It showed a normal kidney with a normal pyelogram on the left side, that the right ureter passed up on the left side of the body to the outer side of the left ureter, and passed across the left kidney and ended in a tremendously dilated and badly distorted right renal pelvis. There was no definite outline of the

calices and apparently some of the calices were far out on the right side while others were indistinctly shown to the left of the mid-line. She had had no illness referable to this growth.

She was admitted to St. Vincent's Hospital April 2, 1930, and operated on April 3, 1930. At operation an incision was made along the border of the right rectus and the peritoneum opened. The left kidney was palpated and appeared to be normal and entirely free of the tumor mass. The liver showed no evidence of

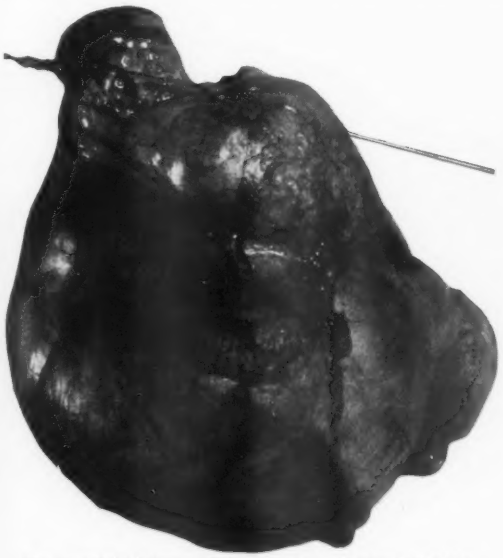

Fig. 3.—Right kidney. Probe in ureter. Evelyn Littlejohn.

any growth, the ascending colon was pushed over beyond the mid-line on the left. The reflected portion of the peritoneum was incised and the tumor shelled out from behind the peritoneum. This was very easy to do since there were very few adhesions to it and practically no blood supply except the vessels that came into the kidney pelvis. The kidney pedicle was ligated, the ureter tied, and the mass removed. The loin was drained through a stab wound in the back and the original incision closed without drainage. The child had an absolutely uneventful convalescence and left the Hospital on April 16, 1930.

She was told to report to the office for subsequent observation at least once a month. She came one month after leaving the Hospital and then disappeared. Her family moved and the follow-up nurse at the King's Daughters' Clinic has been unable to locate her. She has not showed up in any of the Clinics here so it is presumed she has remained in good health.

*Pathological Report:* A nodular somewhat pear-shaped mass 16 x 14 x 14 cm. Surface covered by thickened hemorrhagic capsule.

Rig. 4.--Right kidney. Evelyn Littlejohn.

Nodular masses projecting from the outer side of the lower pole about 9 x 9 cm., has cystic feeling. On section, cut surface shows bulk of tumor made up of multiple cysts, varying in size from .5 mm. to 12 cm. Cyst lining pale, grayish, smooth. Contents of cyst clear watery fluid. Projecting from the lower pole of the mass is a small piece of kidney tissue and the kidney pelvis. Projecting from this over the capsule is a dilated ureter. Probe can be passed down through and out the lower end of the mass. Upper pole occupied by a soft mass (softer than kidney tissue), cut sur-

face translucent, pale grayish, with many fine capillaries scattered throughout. Lower pole torn in handling.

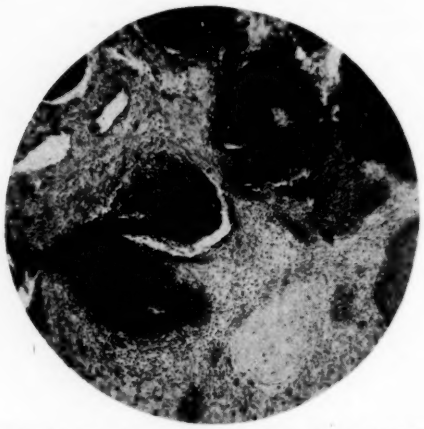

Fig. 5.—Section of tumor removed from Evelyn Littlejohn. **Diagnosis:** Sarcoma in polycystic kidney.

*Microscopical Examination:* Throughout the capsule shows dense eosin stained connective tissue. The collection of small cysts is lined by columnar epithelium. Throughout the soft, spongy tissue attached to the kidney there is a diffuse mass of old cells with deeply staining granular nuclei surrounded by pale staining stroma. Section from tissue near pelvis shows a few renal tubules lined by cubicle epithelium. No hypernephroma cells can be made out. *Diagnosis:* Sarcoma developing in a polycystic kidney.

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## THE VALUE OF THE ROENTGEN RAY IN THE DIAGNOSIS OF LESIONS OF THE COLON.*

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Although it is generally known that the roentgen ray can be of great help in the diagnosis of lesions of the large bowel, yet this method is too infrequently used by the average medical practitioner. It is not his doubt of its accuracy, but his lack of knowledge of the large variety of diseases that can be found with fluoroscope that prevents his using this method of examination. Possibly because he is not acquainted with the methods of examination, he considers it a minor surgical procedure. Colon examination with the barium enema is no more difficult than taking a warm soap suds enema, and the ability of retaining the enema is less so. When the patient is well prepared and the colon empty, it can be filled all the way around to the ileocecal valve before the patient realizes that the examination has hardly begun.

The favorable impression that such an examination makes on the patient is surprising. He realizes that his physician is using every effort to determine the source of his trouble, and neurastheniacs with their minds centered on their colons will be impressed even with negative findings of this complete examination. It is also surprising to note, in a large number of examinations, how many serious lesions are found that are giving only general symptoms with no localizing ones. Where this examination is routinely done in gastro-enterological cases, there is necessarily a large percentage of negative reports, but the number of unsuspected lesions found has taught the value of the examination. In the larger clinics and hospitals, so valued is the opinion of the roentgenologist, that it is seldom indeed that a patient is sent to surgery for lesions of the colon with a negative report from the roentgenologic section. In some cases the physician referring the patient for examination will have suspected only a minor condition, such as constipation, and a carcinoma will be found; and, on the other hand, the provisional diagnosis may be a malignant lesion, and the findings are negative.

Some roentgenologists not wishing to be inconvenienced with the enema method of examination will, from six to twenty-four hours later, follow the barium meal through the colon. For many reasons this method is very unsatisfactory and inaccurate. Parts of the small intestine still containing barium will overlap the colon and prevent complete visualization of the latter. The barium will be mixed with feces and will not cast an even shadow; parts of the colon contents will have become dry and segmented by peristalsis; the colon will be unevenly filled, and several examinations. hours apart, would be necessary to get a partial idea of each loop of the bowel. It is well to follow the barium meal through the large bowel after stomach examination, when a special colon examination is going to be made, but an opinion rendered by this

*Read at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

superficial examination is worth little. Diverticula filled with barium may show up more plainly and more frequently by this method than by the enema method. The barium may be worked into the diverticula more thoroughly by the peristalsis.

In order to obtain an accurate opinion, the preliminary preparation of the patient by the referring physician is very important. It is absolutely essential that the colon be entirely empty of fecal matter and not partially empty. The patient should eat lightly the day before, and take two ounces of castor oil the night previous to the examination. In colon fluoroscopy, no other cathartic is so effective as castor oil, and no quantity less than two ounces sufficient. No other cathartic will leave the colon empty so well as castor oil. The salines will leave the bowel fllled with fluid, and the examination is all but impossible. The morning the colon is to be examined the patient should take several warm soap suds enemas until they are returned clear. Regardless of the results of the oil, there is always a certain amount of feces left in the region of the sigmoid which the enema will remove. It must be understood that fecal remains may cause filling defects that could be mistaken for tumors. A short time before going for the examination, a light breakfast may be eaten, because it will be several hours before it will reach the colon. Proctoscopic examination should never be made the same day. This will leave the rectum irritable, and the barium enema cannot be as easily retained. Frequently also, the proctologist will leave the lower bowel distended with air.

If the above instructions are followed there will be little inconvenience, difficulty, or embarrassment in the examination. Since the barium enema is less irritating and more isotonic than water, it will be more easily retained. The entire colon will fill slowly but gradually, visualizing every loop and portion to the ileocecal valve. It is well for the referring physician to impress upon the patient the lack of any pain or special discomfort during the examination. Many patients are upset more by the thoughts of the examination than by the procedure itself, for they often remark at the end, "Is that all?"

Except in a general way, what the fluoroscopist actually sees will not be given in this paper, because the referring physician will have confidence in the opinion of the roentgenologist to whom he sends his patients and he will accept his diagnosis. The roentgenologist should not be expected to demonstrate on films what he has seen in the dark room. Films are well to check findings and for records, but many conditions and lesions which are very evident on the screen will not show or be not at all convincing on the films. At one of the largest clinics in this country, so confident is the roentgenologic staff in the accuracy of fluoroscopy that films are seldom made on entirely negative colons. Due to temporary spasm, pressure from other abdominal organs, and peristalsis, filling defects may be caused that are strongly suggestive of lesions when seen only on the film. When lesions not found in the dark room are thought to be seen on the film, the best method is to re-examine the patient and pay special attention to that particular area. It is well always to re-ray all patients when the roentgenologic report does not agree with the other clinical findings. The wise roentgenologist will always want to see the patient more than once, when serious conditions are found and the diagnosis was not easily evident at the first examination. The percentage of error in roentgen examination of the colon, if done under the best of conditions as previously outlined, will be very small, certainly no more than 5 per cent.

The tendency in the past has been to find too much, rather than too little, in fluoroscopy of the colon. Conditions have been reported as pathological that the roentgenologist of considerable experience would consider normal. A roentgenologist with great experience in colon examinations will report only pathologic lesions, and seldom abnormal physiology. Doubtless, many cases of disordered functions are seen, but an attempt by the roentgenologist to diagnose these will increase his percentage of error and thereby decrease the confidence in his ability in the minds of the referring physicians. The appearance of the normal colon is almost as variable as that of the individual himself. For example, the sigmoid may vary from a few inches in length to three times the length of the descending portion. The size, shape, and position of the colon, in the normal state, is not often like the descriptions given in the textbooks of anatomy. To tell the referring physician that his patient has a visceroptosis of the transverse

colon is about the same as telling him that the patient is slender, thin, undernourished, and apparently underweight. Occasionally after an accident or a previous operation, either flexure is considerably lower than the average, but this condition is just as frequently seen in apparently normal colons. So little is known about the peristalsis of the normal bowel that, with a very few exceptions, it is never reported. One colon may be spastic and the patient suffer from constipation; another may be redundant and dilated and the patient have the same condition. Unless the roentgenologist is well trained in internal medicine and is well acquainted with the patient clinically, he had better restrict his reports to actual demonstrable pathology.

Congenital conditions are about as rare in the colon as elsewhere. Transposition of the viscera, and failure of rotation of the cecum are occasionally seen. In the latter the cecum and appendix will be found curled up under the hepatic flexure. Megacolon, or Hirschsprung's disease, will be immediately recognized by the large dilated colon, filling the greater portion of the abdominal cavity. The colon from the anus to near the splenic flexure, and sometimes part of the transverse colon, will be many times the size of the normal large bowel.

Often it helps the clinician to know what has been done at previous operations, whether anastomoses were made, segments removed, or from what part a draining sinus is coming. The surgeon appreciates all the advance information possible before doing an exploration.

Fluoroscopy of acute inflammations gives little information that is of value. Examination with this method is seldom necessary, and it is difficult for the patient to retain the enema. The most usual location is the rectum, and a proctologist can be of more service than the roentgenologist.

The most frequent lesions of the large bowel are diverticula, the majority of which are causing no symptoms and are discovered as incidental findings. Weber, who is head of the colon fluoroscopy of the Mayo Clinic, insists on two different words in naming these lesions. Diverticulosis denotes the presence of diverticula, and diverticulitis the presence of pockets with inflammation, causing spasm of the lumen of the bowel, tenderness and other localizing symptoms. Although diverticula may be found in any part of the colon, the most usual location is in the sigmoid, the incidence decreasing as the cecum is approached.

Although the number of cases of tuberculous enteritis and amoebic dysentery is not large, by far the greater percentage of tuberculosis of the colon is in the cecum. On the screen this will show a hyperperistalsis and a ragged mucous membrane with more or less deformity depending on the age of the lesion. In old cases the cecum may be tied up in a mass of inflammatory tissue that may be difficult to differentiate from carcinoma. Tuberculosis in other parts shows about the same condition. Amoebic dysentery may be suspected from its location and the appearance of the ulcerations, but the diagnosis rests more with the history and laboratory findings.

Chronic ulcerative colitis is almost always recognized at roentgen examination. The absence of haustration, the contracted lumen, the thickened walls, often with polyposis, are almost pathognomonic of this condition. Recent articles by Weber and Bargen will interest those wishing further information regarding this condition.

Fistulas between the other portions of the gastro-intestinal tract and the colon are more easily found with the enema than with the barium meal. With the enema there is better control of the barium stream, and the first entrance of the opaque media into the other viscus can be seen. Gastrocolic and enterocolic fistulas occur most often from gastric and duodenal ulcers perforating into the transverse colon. Diaphragmatic hernia may first be diagnosed by seeing the barium filled colon in the chest cavity.

Suspected tumor of the large bowel is the most frequent reason for fluoroscopic examination, yet unsuspected tumors are frequently found by this method. Cases of increasing or severe anemia, and recent and increasing constipation, should routinely be referred for colon ray. The most frequent benign tumors are polyps. Fecaliths and fecal impactions occur. Neither of these benign conditions can be demonstrated on the roentgenogram, because it is necessary to approximate the walls of the lumen by pressure and remove the barium. Carcinoma is seldom missed if the head of the barium stream is constantly watched. The roentgenologist actually seeing the location of the tumor can palpate the area

and determine the size, position and extent of the tumor better than the examining physician. He can decide whether it is intrinsic or outside the bowel wall, determine the amount of obstruction, and to some extent predict its case of operability by the extension to other organs. Carcinomas suspected by the clinician and not found by a competent roentgenologist are usually not present, and the reverse is equally true.

The roentgen ray is of value in diagnosing lesions of the appendix. Except when specially requested few findings concerning this organ are worth reporting. To know if it has been removed at previous operations is sometimes requested, but unless it fills with barium no opinion can be given. When it fills its presence can be reported. When it is rolled between the examiner's fingers and the edge of the pelvis, and found to be tender, this circumstance is reported. The roentgenologic literature contains many articles describing the appendix as diseased if it fills with barium, if it fills irregularly, if it is segmented, if it fills partially, and if it does not fill at all. All of these conditions are probably wrong. In routine examination of the colon the appendix is not often found diseased.

Many other rare conditions may be met with in the fluoroscopic examination of the colon, but they are only of interest from a statistical standpoint. If the roentgenologist does not recognize them he should frankly admit his inability to do so. On the other hand, the referring physician must consider the roentgenologist as a consultant, equipped with highly specialized methods, and trained in their use. Being a medical graduate himself, the roentgenologist can give a much more accurate opinion if he knows all the clinical facts in each case, and he can, with the other consultants, aid the physician in charge to arrive at a correct diagnosis.


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## THE BIOLOGICAL RELATIONSHIP OF EUGENICS OF THE DEVELOPMENT OF THE HUMAN RACE.*

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### INTRODUCTION

Biology may be defined as the science of life and living things: it embraces the structure, function, and organization of living forms.

The bio-genetic laws define the fact that a certain drift or tendency directs the development of a being along lines parallel with a series of ancestral forms: that controlled and selective breeding may modify and change such tendencies, cannot be denied, and eugenics as applied to the human race seeks through education, and the limitation of defective lines to modify certain trends that have been found to be unfavorable to the progressive improvement of our race.

The reactions of many of the lower animals to a given condition may often be predicted if one is in possession of the line of breeding of the particular animal and has knowledge of his previous environment. For instance, we can foretell with reasonable certainty the actions of a pointer in the field, and we know also what his approximate reaction will be upon finding a covey of quail. And so it is with the human species: if one knows something of an individual's ancestry and has a fair knowledge of the conditions under which he has lived, one may forecast with reasonable accuracy what that individual's reaction would be under certain conditions.

The sum total of reactions, if they could be integrated, would represent the influence of inheritance, training, and environment. This hypothesis on the face of it appears uncomplicated, and if the behaviour problems of the human race—and after all that is the thing which concerns us most—were soluble from a practical standpoint at the intellectual level of the mind, our racial troubles would soon disappear.

We know, or think we know, the necessary groupings of mental qualities and physical characteristics in a mating, requisite for the production of normal offspring, and our failures in reproduction, which are so astoundingly apparent on all sides, result from our inability to practically apply the knowledge we have acquired through our successes with controlled

*Read by title at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

and selective breeding in the lower animals. Contrast the gigantic failures in the human family, where sentiment is the controlling factor in the selection of mates, with the certain physical markings and qualities that may be produced by controlled mating in the equine, the fowl, or the canine families.

It seems that we have not yet arrived at that advanced point in our progress of thinking where people generally would sit down and reason this out and practically apply it. I do know, however, from personal experience that there is an increasingly large number of intelligent people contemplating matrimony, who come to me for confidential eugenical advice, and who are very earnest and very sincere in their efforts to secure some light upon the probable results of such and such a mating. These instances, while all too rare, are nevertheless most heartening and bode well for the future.

### Elements of Man

We speak of man today as the product of modern civilization. This is a somewhat erroneous conception, as he has unquestionably arrived at his present status through millions of years of toil and struggle, and from a beginning, which was perhaps as uncomplicated and infinitesimal in its structure as are the simplest forms of life upon the earth at the present time; so that his body and mind must possess something of the elements of thought, instinct, and structure of all that has gone before. Many of our cruder impulses are clearly animal in nature held in leash by inhibitions that have been developed through fear of unfavorable consequences to ourselves, and represent an effort to meet the requirements of the civilization in which we live. When inhibitions of some primitive instincts are broken down, as they often are, one may pay with his life for acts originating, no doubt, from the same elemental genesis as in the lower animals, and which are performed by them every day without serious consequences to themselves.

To the basic things of existence, such as life, death, reproduction, anger, fear, and many others, man is, therefore, both elemental and instinctive in many of his emotional reactions.

### Historical Lights on the Highway

The idea of eugenics is perhaps as old as the written history of the human race. The word itself is derived from the Greek eugenos, meaning well-born. The Spartans, as you will recall, practiced a form of eugenics scarcely tolerable today; and crude and cruel though it was, it seems to have been the thing that enabled them to develop a remarkably heroic race; the weaklings in their young citizenry were eliminated by putting all children through such physical hardships that only the fit survived. The Romans also made attempts at racial improvement by casting their defective infants into the River Tiber or leaving them upon the mountainside to starve. And so the idea of elimination, by one way or another, of those who were expected to be disqualified for a certain standard of physical and mental perfection, has come down to us through a great space of time, and persists as strongly in the minds of people today as it did in the minds of the ancient Spartans and Romans.

Traces of these earlier efforts to preserve a healthy race may be found in the laws of Lycurgus, and in the present age somewhat similar customs are said to have existed among the South-Sea Islanders and also amongst a tribe of North American Indians, who were distinguished for their intelligence, strength, and physical beauty. Such efforts to preserve a healthy race, cruel as they may seem, were after all but the pursuit of natural laws: "the buds unfit to mature, fall; and the weaklings of the flock must perish."

We find mention now and then of those who in ancient times escaped these drastic measures. Such were occasionally preserved, for one reason or another, in the houses of Romans of high rank. Seneca refers to the blind imbecile, Fatua, who belonged to his wife; some by freaks of fortune filled exalted positions: Nero, Commodus, Elagabalus—undoubtedly imbeciles all—wore the royal purple.

Not until the dawn of Christianity, however, when sorrowing mothers brought their demoniac sons to the Divine Healer, is there any record, except in isolated instances, of special care, commiseration, or pity for these unfortunates. But from this time on there seems to have been a changed sentiment, and during the Middle Ages the imbecile and insane wandered unmolested over Europe and the Orient, often having the freedom of the castles of the great and being regarded as *les enfants du bon Dieu.* Confucius and Zoroaster in their writings both enjoined a special care of them, and during the reign of Edward II we find the following royal proclamation: "The King shall have the custody of the lands of natural fools, and tak-

ing the property of them without waste or destruction shall find them their necessities, and after the death of such fools, he shall render the same land to the right heir, so that such idiots shall not become alien or their heirs disinherited, and a portion shall be distributed for a soul upon advice of the Ordinary."

Then the pendulum again swung backward, and persecution followed fast upon the heels of superstition. In the days of the Reformation we find Martin Luther and John Calvin denouncing the insane as possessed of the Devil, and not until the 17th century was there any organized effort for their care. This movement had the cradle of its birth at Bicetre, the great asylum of Paris, and was initiated through the efforts of St. Vincent de Paul and carried forward by Seguin, Rosseau, Itard, Voisin, Vallee, Ferrus, and other great Frenchmen.

We are justified, therefore, in crediting France with the beginning of this newer and more humane conception of the public's duty towards its unfortunates. Out of the experiment at Bicetre arose the policy of segregation of the mentally unfit in institutions to themselves, and with this was finally associated the conception of segregation as a means not only for humane care but also as a method for the prevention of reproduction, this being regarded up until the last quarter of a century as the only legitimate eugenic procedure.

With advancing knowledge in biology, however, and through experimentation in the breeding of lower animals, much new light has been thrown upon the subject of inheritance and many theories, some scientifically proven and others still the subject of much debate, have been developed. The most important insofar as we are concerned at the present time are the theories of the transmission of mental qualities through the media of the genets on the chromosomes, and the certainty of being able to maintain a given set of physical markings, the quality of motor activity, and instinctive reactions, in the lower animals by controlled and selective breeding. The pure-bred Holstein cow, for instance, invariably has certain colour markings, without which she is not pure-bred and cannot be registered: these markings are as persistent in the line as the eternal hills, and any slight deviation from the pure breed will change the markings.

The horse may be bred at will to serve the plow or the race track: and in each instance specific qualities of strength, speed, and intelligence are controlled and transmitted.

### Social Reflections of Eugenics in the Modern World

Society for convenience of reference may be divided into three great classes, commonly referred to as the upper, middle, and lower, and under these are numerous subdivisions with infinite variations and degrees of social status and financial rating, the scale of living and the thing called *culture* being the principal defining elements of our position in this world of complicated social relationships. The widespread dissemination of contraceptive knowledge amongst the upper and middle classes, and the disinclination of these intelligent people to beget more offspring than they can maintain at a certain standard of living, and on the other hand the apparent lack of such knowledge, or disregard of it, amongst the lower classes, has resulted in a marked reduction in the birth-rate from our best stock without any corresponding reduction in the birth-rate of inferior stock, so that we are now breeding extensively from the bottom and a little from the top. In an attempt to offset this to some extent, eugenics may rightly find its place through the dissemination of this idea amongst the upper and middle classes and education amongst the lower classes, this to be further aided by such eugenic measures as are in force today, namely, segregation and eugenic sterilization where lines are notoriously defective.

### Legal Reforms: Past, Present, and Future

Many legal reforms of the past enacted for the advancement of eugenics have fallen into disuse, or through their failure to fit in with the popular conception of humane measures, have suffered repeal: such eugenic laws as are now on the statute books in this and other States are aiming at the reduction of defective people through segregation, eugenic sterilization, reformation of the marriage laws, and the improved social control of the defectives at large in the community.

The State of Virginia has not been unmindful of her responsibility in these matters, and has written into her statutes a Code of Public Welfare laws second to none; many of these having been extensively copied in other States and having been the subject of widespread and favorable comment. We cannot, however, stop here: other things must be done, new laws

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must be enacted and old ones repealed in order to meet new and ever-changing conditions.

I might mention as progressive legislation an Act to prohibit the marriage of notoriously defective persons except under certain conditions. Such an Act might be worded somewhat as follows:

"Be it enacted by the General Assembly of Virginia that if any citizen of this Commonwealth has reason to believe that any persons preparing to enter into the state of matrimony are by reason of the presence of epilepsy, insanity, or mental deficiency, in one or both, mentally unfit to discharge the obligations of parenthood, then the aforesaid citizen shall file a complaint with the Judge of the Corporation Court of the City or the Circuit Court of the County in which the aforesaid contracting parties reside setting forth under oath the reasons for his opinion, and, sufficient evidence being presented to the Judge, he may, if he see fit, issue a writ of injunction restraining the Clerk of the Court from the issuance of a marriage license until proper opportunity is had for investigation of the mental status of the aforesaid contracting parties. The Judge shall then summons a commission consisting of any two of the Superintendents of the State Hospitals of Virginia, or any two regular physicians qualified under the laws of the State of Virginia as practitioners, who are specializing in psychiatry, to sit at a point convenient to the defendant or defendants for the purpose of investigating the mental condition of one or both of the aforesaid contracting parties, as the case may be.

"The findings of this commission shall then be certified to the Judge of the Court in writing, and if the defendant or defendants by reason of the presence, in one or both of them, of any or all of the aforesaid mental diseases, are found incompetent of assuming the obligations of parenthood, then the Judge of the Court may, at his discretion, order the commitment of one or both of the contracting parties, as the case may be, to the proper State Hospital for the insane, if the person be afflicted with some form of insanity, or to the State Colony for Epileptics and Feeble-minded, if the person be afflicted with epilepsy or mental defectiveness, for the purpose of eugenic sterilization, as provided for under Chapter 394, Acts of the General Assembly of Virginia, 1924, and following the full performance of this Act, the aforesaid person or persons may, at the discretion of the Superintendent, be discharged from the institution for the purpose of matrimony."

There might also with reason be an Act requiring all persons contemplating matrimony to submit to a proper physical examination by a licensed physician to rule out the presence of syphilis and gonorrhea. Some of the more progressive Commonwealths have already gone this far; manifestly such an Act would not work a hardship on any one fit to marry, as these diseases are in the main curable, and any one so afflicted may not permanently be deprived of the privilege of matrimony.

### Community Obligations in Racial Reproductions

To borrow a homely and familiar phrase: "No chain is s t r o n g e r than its weakest link," and irrespective of how much the central government of a nation or a state is doing towards the improvement of its mental and physical public health, it must fall far short of distinguished accomplishment unless a like interest and activity can be stimulated in the smaller subdivisions of government. The County and City governments, therefore, must assume their proportionate part of these obligations.

Much progress has been made through the organizations of local welfare units and district homes: as has been done in Virginia under the direction of the Department of Public Welfare, so that now a very complete skeleton organization is in force in this State, which, of course, will need enlargement and reinforcement from time to time as funds are available.

It is extremely important that the communities become socially-minded: that is, that they become more alert to situations in human relationships which are likely to be productive of defective and socially incompetent progeny. One moron couple in a neighbourhood, existing as they often do through the benevolences of the charitably inclined people, is capable of multiplying the problem tremendously within a few years, the original problem of two often being augmented by four, six, or eight, within a decade.

There has been, and still is to some extent, a strong disinclination on the part of a few communities to reabsorb persons who have been inmates of institutions: this is particularly true

with reference to the epileptic and feeble-minded; many of the younger people of these classes may, after periods of treatment, training, and discipline, and after eugenic sterilization, be paroled or discharged with reasonable safety to themselves and others. And as it cannot be anticipated that the institutions will ever be able to receive for premanent custodial care any but a small proportion of the total number of persons committed, a liberal parole and discharge policy must be maintained in order that those who may reasonably well adapt themselves to living conditions in the outside world may have an opportunity to do so, and in order that those who are awaiting admission may in turn be received, treated, trained, and paroled or discharged.

Happily, the majority of communities are accepting this idea of their obligations as to the supervision and after-care of institutional cases: and this work will, of course, grow in efficiency as time goes on.

### Prognosis for the Recovery of an Ailing Race

When we take into consideration the very notable advance in public welfare work in the past quarter of a century, as compared with the preceding 100 years, we can but feel somewhat optimistic of the future: people generally being far more alert today in matters relating to the mental and physical well-being of themselves and their neighbours than they were a quarter of a century ago, and we anticipate continued and uninterrupted progress along these lines. Much of the mawkish sentiment and flimsy shibboleths of a few years ago have faded away before the light of education and in the face of uncontrovertible statistics and scientifically proven theorems. It is not foolish to hitch one's wagon to a star, for the unbelievable theory of today becomes the proven laboratory fact of tomorrow, and while perhaps a Utopia may never arise out of our efforts to better our brother's condition in this world in which we live, nevertheless, much that is practical and useful and elevating to all can be developed and carried to a successful conclusion by the simple formula of all who are interested in these things pulling together towards the common goal: a citizenry purged of mental and physical handicaps.

The following questions with reference to statements in this paper were raised by a competent psychiatrist and neurologist at the recent meeting of the Virginia State Medical Society.

1st: Do we know the necessary grouping of mental qualities and physical characteristics in a mating requisite for the production of normal offspring?

2nd: Can we define or limit the respective influences of environment and inheritance on the offspring?

3rd: In view of more recent investigations in biology does Galton's Law—the law of filial regression as it is sometimes known—hold good?

4th: Did matrimonially inclined persons who consulted me with reference to the probable eugenic result of such and such a mating take my advice?

These questions have been answered as follows:

I am not especially disconcerted by Dr. Henry's first question. The answer is here: we know that a mating of two epileptics, two insane, or two feeble-minded persons cannot, and does not, produce a normal, who will adequately meet the obligations of modern society, and conversely we may assume for the present that two normals will, and do, produce a normal.

The chief problem is "by what criteria shall we judge normalcy?"

I shall say that a reasonable working hypothesis would be as follows: A mating in which the male and female has no antecedants within the first two preceding generations who had produced an insane, semi-insane, neurotic, psychotic, epileptic, or feeble-minded person; a male and female whose two preceding generations had not produced a single socially or economically inadequate person; a male and female whose physical bodies had been sound from birth and whose sperm cells and germ cells had never been subjected during the maturation stage or thereafter to toxic or cytolytic influences from the soma or living body.

Two persons so mated, I should say, would invariably produce a normal: a person socially and economically adequate for his time.

How to obtain this perfect person is, of course, another story. But I think you may agree without stultifying your conscience that this is theoretically possible, and so fast do we move that the theory of to-day becomes the accomplished fact of tomorrow.

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The germ cells and sperm cells are the only structures directly concerned in the reproduction of the organism's kind, and if these cells and the substance germ plasma can be kept free from injurious physicochemical and mechanical influences during the maturation stage and thereafter, I see no reason why it is impossible to produce the perfect plasma.

Dr. Henry has referred to the belief of a prominent psychiatrist that the biologists working on these problems have so far been unable to define fully and limit the respective influences of environment and heredity. In this connection I may cite for you the experiments of the biologists Stockard and Craig whose experiments so far have not been questioned and of which so distinguished a worker as Dr. Myerson has said, "There seems no reason to doubt but that they will stand the test of time." Stockard and Craig in their laboratories subjected guinea pigs to the fumes of alcohol for six days out of the week until they were thoroughly toxic, but not incapacitated for mating: the results were as follows:

Of ninety matings, between the normal female and the alcoholized male there were thirty-seven abortions, ten litters were still-born, forty-three litters contained living young, and thirty-five of these lived only for a few days. The forty-seven survivors contained many small, defective individuals that were stupid, physically below par, and with various physical deformities and involvements of the nervous system. There were cases of corneal opacity, paralysis agitans, shrunken optics, and in some instances entire absence of the globe, as well as albino types with deformed limbs.

In mating the alcoholized female with a normal male, there were seven abortions, four still-born litters, and twenty-two living litters of which twenty-two died shortly after birth.

The results of the matings in which both parents were alcoholized were as follows: of forty-one matings, twenty were totally negative; there were fourteen still-born litters, and seventeen living litters, with twenty-six young, of which twelve died shortly after birth. The control of ninety matings of normals gave sixty-six living litters and ninety-nine surviving offspring. The offspring from the toxic parents were relatively defective as to size, intelligence, and physical characteristics, and defects arose in strains from the male side in which the treatment had been given to the second or third preceding generation.

It is scarcely necessary for me to point out the fact that deterioration as the result of the toxic male progenitor could scarcely have been due to anything other than a change produced in the germ cell, and the fact that defects arise in this way in three or four succeeding generations is certainly strongly indicative of true hereditary transmission through modification of the germ plasma.

Dr. Henry refers to Galton's Law, or filial regression, which held that succeeding generations tended to wipe out any departure from the mean. This theory, I think, is successfully exploded by the recent laboratory experiments of Geyer and Smith. They injected into fowls the pulverized lens of rabbits, securing a serum having a very destructive effect upon the lenses of rabbits. This serum was injected into the pregnant albino rabbits. In the succeeding two weeks many foetal rabbits died: in nine out of the sixty-one that survived, the lenses were small, and more or less opaque. There were small globes, and in some instances entire absence of the optics. The controls injected with serum of untreated fowls showed no modification.

The important conclusion is this: when these characters appeared in the rabbits, they became hereditary without further injury, and were transmitted for eight succeeding generations beyond which the experiments were not conducted. Further, the defects strongly tended to become more serious in each succeeding generation. In crossing defective males with normal females, some offspring were produced with normal optics; but when these were again crossed with defective males, a number of young with degenerate eyes were produced. The answer here is as follows: The germ plasma passed through and the individual is only an off-shoot of the stock, and no one insofar as I know has been able to discount the facts brought out in these experiments, and it does not seem possible to deny that new characters may appear as the result of environmental forces within the body and these in turn may be transmitted from generation to generation. The influence of environment may for the present be dismissed with the simple assertion that the forms of life used in these experiments by Stockard and Craig, Geyer,

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and Smith, were subjected to the same environment, and I am personally of the opinion that a normal, natural individual with good ancestry will find some way to make for himself an environment in keeping with his breeding.

I am afraid that I will not be able to answer Dr. Henry's last question to his entire satisfaction, if I have the others. He wants to know what proportion of persons coming to me for confidential eugenic advice acted on the suggestions given. Roughly, I should say, that out of a half-dozen such inquisitors within the past year, there were two who apparently acted upon the suggestions I gave them. The important thing, however, is not how many came, or what their reactions were, but that they came at all. And this I interpret to mean that intelligent young people of today are at least giving such matters some serious consideration.

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## TREATMENT OF CARCINOMA OF THE CERVIX BY RADIUM AND ROENTGEN RAY.*

By EDGAR M. McPEAK, M. D., Washington, D. C.

Welch[1] in a review of 31,000 cases of cancer found the uterus involved in 29.5 per cent and of this number approximately 90 per cent are of the cervix. Carcinoma of the cervix is, therefore, one of the most frequently encountered cancers and its proper and adequate treatment is of prime importance.

The purpose of this paper is to outline in a general way the treatment of carcinoma of the cervix by radium and X-ray and to present our results over a five-year period ending January 1, 1926, with a review of the results obtained in the treatment of this condition at some of the leading clinics in this country.

No attempt at a review of the causes, predisposing factors or allied data will be made because of the voluminous material involved.

### CLINICAL AND HISTOLOGICAL CLASSIFICATION

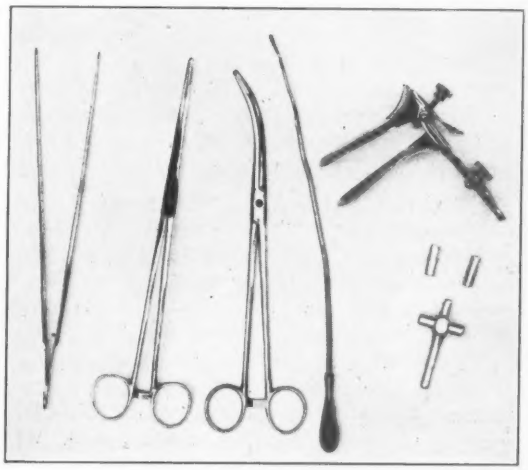
There are two histological and clinical varieties of carcinoma of the cervix, namely: (1) Squamous cell or epidermoid carcinoma, and (2) glandular or adeno-carcinoma. The epidermoid or squamous cell lesion arises from the epithelial lining of the vaginal portion of the cervix and comprises well over 90 per cent of the cervical carcinomata. The glandular or adeno-carminoma has its derivation in the glandular structures of the cervical canal and comprises less than 10 per cent of the cervical cancers.

It is occasionally possible in the very early cases to differentiate between these two types clinically, although as the lesion progresses the individual characteristics are lost and the clinical appearance is the same Adeno-carcinoma is slightly the more malignant and this variety in all grades responds a little better to radiation therapy.

### DIAGNOSIS

The early diagnosis is most essential since the end-result is practically in direct proportion to the degree of involvement.

The one dominant symptom is irregular or untimely bleeding, and every woman presenting such a history, regardless of age, should have a thorough pelvic examination in order to exclude cervical carcinoma. If the condition is present, it is not a difficult diagnosis as its appearance is characteristic and a careful bimanual examination will determine the extent of the involvement.



Description of Instruments.
1. Long Finger Forceps.
2. Sponge Forceps.
3. Radium Holder.
4. Uterine Sound.
5. Gold Crucifix.
6. Gold Capsule.
7. Bi-valve Speculum.

*From Radiological Clinic of Drs. Groover, Christie & Merritt, Washington, D. C.
Read at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, Va., October 21-23, 1930.

It is not essential to perform a biopsy to establish a diagnosis and we are strongly opposed to such a procedure. The added trauma to the tissues and the opening of the vascular and lymphatic structures incidental to the removal of a section increases the chance of metastasis. The damage done far outweighs any scientific information gained.

Biopsies were obtained in the majority of cases reported in this paper, but we have discontinued this procedure during the past three years. There are few cases where a clinical diagnosis cannot readily be made and in these the pathological report, in our experience, has been of little aid. The doubtful cases then do not justify the drastic method with its attendant dangers solely for a record.

### Treatment

The consensus of opinion among the leading surgeons, gynecologists and radiologists is that the treatment of carcinoma of the cervix, irrespective of the type or degree of involvement, lies entirely within the realm of radiant energy. To quote Francis Carter Wood[2], "It is perfectly evident that the time has passed for surgery of carcinoma of the cervix." There are several procedures still in practice which should be mentioned in order to condemn them. A few surgeons continue to cauterize the cervix before referring these patients for radiation therapy. No beneficial effect is accomplished by this method and a definite damage is done. There is no hope of a complete removal and there always follows a certain amount of sloughing and edema for several weeks which interferes with the proper application of radium. This delay may militate against recovery and should be avoided.

Tenacula are used far too frequently and without respect for the lesion. Some operators do not hesitate to bury a tenaculum in a malignant cervix and use forceful traction. This is a deplorable method and should be condemned. There is rarely a place in this condition for the use of such an instrument and, when used, it should be done with the greatest care and gentleness since it is essential that the cancerous cervix should be traumatized as little as possible.

There is also no place for the weighted speculum in the treatment of cervical malignancy. The unnecessary damage to the tissues incurred by such an instrument is great. This procedure should be discarded for the simpler bi-valve speculum which can be easily introduced and an ample field afforded with little or no trauma. The bi-valve speculum makes it unnecessary to use a tenaculum except in rare instances.

The practice of dilating the cervix in the presence of malignant disease is employed by many thoughtless operators, but this is fraught with danger and should not be attempted. If the cervical canal will not admit the free passage of the radium capsule into the uterine cavity, this step in the treatment should be postponed and the radium placed against the cervix and high voltage roentgen therapy instituted. Under this regime, the cervical growth will rapidly diminish, and in the course of two or three weeks the cervical canal will be patent and the radium can then be easily passed into the uterus.

There are rare instances of personal idiosyncrasy to radiant energy and the employment of massive doses of radium is contraindicated, and if used may end fatally. It is, therefore, advisable to give one series of high voltage roentgen therapy to all of these patients, regardless of the degree of involvement, as the initial step in the treatment. The procedure serves a dual purpose. It affords a definite test as to the patient's susceptibility to radiation and it is also of great value as an adjunct in the devitalization or destruction of stray malignant cells.

The second step in the treatment depends entirely on the location and size of the growth. If the case is a very early one, with neither extension into the vagina nor encroachment on the cervical canal, then the gold crucifix containing 50 mgms. of radium can be introduced into the cervical canal for five days. The crucifix is so arranged that 10 milligrams of radium are in the uterine cavity, 10 milligrams in the cervical canal and 30 milligrams against the cervix. After an interval of three weeks, high voltage roentgen therapy should again be employed and two complete series given at six to seven week intervals.

Should the growth be very large and encroach upon the canal, non-removable radon seed should be implanted in the lesion with the radium capsule placed against the cervix. This

will permit the easy use of the gold crucifix within a few weeks.

Every case is an individual problem and should be dealt with as such. The only steps that should be employed routinely are the three series of high voltage roentgen therapy, one series being given as the first step in the treatment, and the other two supplementing the radium. The correct employment of radium is entirely guided by the type of lesion as to whether the gold crucifix, the radon seed, the capsule against the cervix, or a combination shall be used. It is essential, however, that enough radiant energy be given and the best results are obtained by three complete series of high voltage roentgen therapy (200 K. V. Peak) and approximately 6,000 milligram hours of radium filtered preferably through 3 mm. of gold. The all important point is to avoid unnecessary trauma to the cervix and adjacent structures by undue and uncalled for instrumentation.

## Results

In this series, all cases receiving previous operative treatment for carcinoma of the cervix have been excluded, since the object of this report is to place before you the results expected in the treatment of cervical carcinoma by radiant energy.

The cases are arranged in three groups, according to the degree of involvement. Group one comprises those where the growth was limited entirely to the cervix. Group two includes those with an involvement of the cervix and extension into the vagina. Group three comprises the advanced cases with extension into the broad ligaments, fixation of the uterus, etc. The number of cases in each group is given with the percentage living at the end of one, two, three, four and five years.

The best results are obtained in the early cases although the results in the hopelessly involved are very gratifying and are remarkable for the relief afforded and the material prolongation of life.

Recent articles by Bowing, Des Jardins, et al.,[3-4] present the results from similar treatment at the Mayo Clinic. They report 66.7 per cent of the favorable and 23.87 of the borderline and inoperable cases living at the end of five years.

Healy[5] from the Memorial Hospital in New York City reports 44.5 per cent five-year cures in the favorable cases.

TABLE RESULTS

| Group | Cases | Cases Living | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Year | | 2 Yrs. | | 3 Yrs. | | 4 Yrs. | | 5 Yrs. | |
| | | No. | % | No. | % | No. | % | No. | % | No. | % |
| I Growth limited to cervix..... | 16 | 16 | 100 | 15 | 93.7 | 13 | 81.2 | 12 | 75 | 11 | 68.7 |
| II Involvement cervix and vagina..... | 7 | 7 | 100 | 6 | 85.7 | 5 | 71.4 | 4 | 57.3 | 3 | 42.8 |
| III Advanced cases with abdominal involvement..... | 13 | 10 | 76.9 | 9 | 69.2 | 7 | 53 | 4 | 30.7 | 3 | 23 |
| Total... | 36 | 33 | 91.7 | 30 | 83.3 | 25 | 69 | 20 | 55.6 | 17 | 47 |

## Summary

Carcinoma of the cervix is one of the most frequently encountered cancers and one should be constantly on a lookout for the lesion since an early diagnosis is very important. This condition should be excluded in all women having irregular or untimely bleeding and vaginal discharge, regardless of age.

The treatment of cervical cancer should be entirely by irradiation. The results when compared with the former surgical results are gratifying and, with the knowledge accumulated in recent years concerning radiant energy, a marked improvement may safely be expected in the future. By using heavily filtered radium and high voltage roentgen therapy and avoiding all unnecessary trauma to the cervix and surrounding structures, approximately 80 per cent of the cases in group one should live five years. Emphasis, of course, is placed on an early diagnosis although there will always be cases more advanced when detected and it is important to remember that these individuals have a fair chance for recovery. The cases having an extension into the vagina as well as an involvement of the cervix have over a 40 per cent chance of living five years and one out of three of the advanced

cases may expect the same duration of life. In addition to the prolongation of life in advanced cases, the pain is usually entirely controlled, and this alone justifies the method.

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## DIABETIC COMA.*

By CLAUD SMINK, M. D., Baltimore, Md.

In selecting this subject for discussion one is influenced by two outstanding facts. First, that this is an acute medical condition analogous to an acute surgical condition such as, for instance, a ruptured ectopic (and who would not make all possible haste to get an ectopic to a surgeon), and should always be given the respect and care demanded by the relatively few acute medical crises. It demands immediate and continuous and expert understanding and treatment and will give the most brilliant results if so treated and the most deplorable lack of results if imperfectly, improperly or tardily treated.

In the second place it is only in the last few years since the advent of insulin that we have been able to promise anything to these cases, as without this valuable remedy the condition was almost universally fatal. My plea, then, is for an early and accurate diagnosis and treatment and the results will, I am sure, justify any labor involved.

The reason for the acidosis of diabetes, which terminates so often in coma, being the improper oxidation of the end products of fat metabolism and these products being unable to be burned except in the presence of carbohydrate, the old treatment of acidosis with sugar was rational, but lacked the insulin to burn the sugar and so was unsuccessful.

Let us consider first the signs and symptoms of the acute and chronic acidosis of diabetes, both of which so often terminated in a fatal diabetic coma formerly and which yield such surprisingly splendid results under present day insulin treatments. The chronic form of acidosis may and often does persist for months with no other symptoms than a reduction of the $CO_2$ content of the blood from 50 to 40 or possibly 35 volumes per cent, and such ordinary symptoms as headache, anorexia, indefinite soreness and pain in the body, insomnia, indigestion, fatigability and lack of ambition. We have all seen a diabetic neuritis, in this type of acidosis, which was characterized by pain in the distribution of the peripheral nerve involved, and relieved by the removal of the sugar, acetone and diacetic acid from the urine by proper adjustment of diet. The diabetic tabes with loss of reflexes is of this origin and I have seen a diabetic neuritis of the ilio-hypogastric and ilio-inguinal nerve simulate an appendicitis and clear up with dietary change.

This chronic acidosis, then, is interesting and undoubtedly important but not so critical as the acute acidosis which may follow the chronic type, or may come on suddenly with no previous signs; no signs in the urine on the previous day and no symptoms two hours before its onset. The symptoms of acute acidosis leading to coma are often protean in their original manifestations. There are, however, certain signs that should put one on guard and suggest careful urinary examinations for diacetic acid and acetone and blood examination for blood sugar and carbon dioxide content.

There is the soft eyeball, decrease of intraocular tension, usually there is pain in the epigastrium, often nausea, vomiting, and the Kussmaul breathing, which is exactly as though there were a weight on the chest that the patients must lift with each respiration. The temperature is sub-normal and soon drowsiness occurs going swiftly into coma.

Accompanying or following these are the signs of dehydration. There is a dry skin, red glistening throat, mouth, tongue and lips, which are very dry and crack easily. The superficial tissues become flabby. The acetone or fruity odor of the breath becomes marked. The eyes become sunken, the blood pressure very low, the $CO_2$ of the blood goes down as low as 10 volumes per cent. I have seen a

*Read before the Lister Society, of Baltimore, Md., November 3, 1930.

child of four years in coma, with 8 volumes per cent, recover and go on to her present age of six with insulin and regulated diet. The white cell count rises to as high as 25,000, which is partly due to the dehydration. I might say that the dehydration is extreme. We had one patient at St. Joseph's Hospital who came in, in a diabetic coma, so dehydrated that in thirty-six hours we were able to increase her weight fourteen pounds by introducing fluid by mouth, rectum, and under the skin.

It might be apropos to remark here that the Loewi reaction, which is the dilatation of the pupil if adrenalin is injected into the conjunctival sac, is supposed to be definite evidence of pancreatic disease. We have had no experience with it.

Let us now consider the differential diagnosis of this condition. We see a patient for the first time and he is in coma with no history obtainable. First, we think of uremic coma, and these points present themselves to us. The blood pressure in uremia is high; in diabetic coma, low; the urine shows albumen and casts in uremia, sugar and acetone in diabetic coma; the retinitis of nephritis is present in uremia, but, as all older diabetics soon become arteriosclerotic and develop some kidney condition, the diagnosis by glycosuria is more reliable. The Kussmaul breathing is different from the stertorous respiration of uremia and the acetone odor of the breath and soft eyeballs and normal blood urea of diabetic coma is opposed to the high blood urea, normal blood sugar of uremia. The $CO_2$ of the blood is of great value here as it is usually normal in uremia.

One thinks also of a brain tumor in a comatose patient but the choked disk, change in visual fields, normal breathing, aglycosuria, normal blood sugar and NPN, normal $CO_2$ blood content and projectile vomiting of brain tumor will rule it out.

In the case of cerebral hemorrhage we have dilated or unequal pupils as opposed to soft eyeballs of coma. There is often glycosuria in cerebral hemorrhage and so we must be careful. The breathing is not Kussmaul in type but is slow, stertorous and often interrupted by periods of apnea. The $CO_2$ of the blood is normal, the blood pressure is high, often there is evidence of paralysis as indicated by unequal resistance of the limbs on lifting, conjugate deviation of the eyes, or facial paralysis that is noticeable. The blood sugar is normal and acetone absent in the urine, blood and breath.

Meningitis has bothered us at times but, after noting the fever, the lumbar puncture, the cervical rigidity, the Kernig's sign, the changed or exaggerated reflexes, the normal blood sugar and the normal $CO_2$ of the blood, the diagnosis is made. It must be remembered that glycosuria is often present in meningitis and if the case is old enough acidosis may have developed and put acetone in the urine.

Now oftentimes a case of diabetes treated in the hospital with insulin will go into sudden coma and the question of insulin shock or diabetic coma may become very embarrassing. One must be alert to remember that in insulin shock the first specimen of urine obtained by catheterization may show sugar, as it may have been in the bladder before the last dose of insulin was given. It is well to get a second catheterization if possible. This will show no glycosuria in insulin shock. Acetone is always present in the urine in diabetic coma but very unlikely in insulin shock. Blood sugar is low in insulin shock, high in diabetic coma. The breathing of insulin shock is not Kussmaul and is usually normal, the eyes are not soft, nor is there a fruity odor to the breath. Orange juice by mouth, adrenalin by hypo or glucose by vein relieves insulin shock almost miraculously.

Regarding the treatment of diabetic coma or acidosis, once the diagnosis is made, there is not much question. Our rule at St. Joseph's Hospital is to give insulin in doses of from 20 to 40 units by hypo or intravenously as the condition of the patient indicates. Then get the blood and urine for immediate examination. The patient is now given water by mouth, by hypodermoclysis, and by rectum. Hot water bottles are applied and usually a gastric lavage is done with bicarbonate of soda solution. We usually leave some castor oil in the stomach but this is not routine. If there is not sufficient return to consciousness for the patient to take orange juice by mouth, we give 25 grammes of glucose intravenously and from 30 to 50 units of insulin each hour or two until the acetone disappears from the urine. As soon as the patient will swallow, we give the sugar in the form of orange juice by mouth, covering it with insulin by hypo. The dose

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of insulin will be determined by the urine and blood sugar findings which must be done each hour, and the patient should not be left to nurse or inexperienced attendant until all danger is passed. After the first two or three doses, one can usually remove all sugar from the urine and will soon get a normal blood sugar by giving 20 unit doses at one or two hour intervals. The dose of insulin will vary greatly, especially in the presence of infection, and many cases of diabetic coma are the result of injury or infection. I have found it necessary to use 350 units of insulin daily in the case of a man with a carbuncle, before it was drained, whereas he only needed 60 units to keep his urine clear and blood normal after the surgeon's ministrations. This same patient required no insulin but merely a properly adjusted diet after recovery from his infection.

These patients should be supported with caffeine sodio-benzoate, whiskey, digitalis and any other stimulant necessary. Oftentimes the insulin, glucose and stimulants are given intravenously in the same syringe. One cannot stress too strongly the necessity for removal of infection and for the treatment of the dehydration.

In the event of the overuse of insulin, one always has at one's command adrenal by hypo, sugar by mouth or intravenously. There can be no excuse for accidents. We have discontinued the use of bicarbonate of soda recently and feel that we have lost nothing by doing so.

It is essential that the patients resume a maintenance diet rather high in cabohydrates, and adequately covered by insulin, as soon as possible.

4706 *Harford Road.*

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## THE TREATMENT OF ACUTE GONOCOCCAL URETHRITIS IN THE MALE.

By SIDNEY SMITH, M. D., Raleigh, N. C.

There is at present much difference of opinion among the medical profession as to the ideal plan of treatment of acute gonorrhoea in the male. This has probably resulted from a failure to appreciate the aim and purpose of urethral medication. Nothing would stabilize this situation more than proper consideration of what drugs give best results, and why. The antiseptics and germicides now in common usage are of value not for their gonococcocidal effect but because they stimulate the natural resistive powers of the urethra against the infection. The ideal germicide has not been found, and until this goal is reached we must be content to use our most efficient drugs in a manner that will produce fewer complications and better end-results.

A simple, easily carried out, effective plan of treatment is herein described with the hope that it may be of some value in the management and cure of acute gonorrhoea in the male.

### Anatomy of the Urethra and Prostate

To properly and intelligently treat acute gonorrhoea, one should certainly know something of the anatomy of the urogenital structures. A brief description may serve to freshen the mind on this subject.

The urethra, as often thought, cannot be described as a hollow tube, but must be considered as a canal of intricate formation and structure. It is divided anatomically into an anterior and a posterior portion. The anterior layer of the triangular ligament or external sphincter muscle is the dividing line. The anterior urethra is lined by a delicate layer of mucous membrane with numerous small tubular glands which extend down into the submucosal tissues. These structures offer an excellent habitat and hiding place for the gonococcus.

The posterior urethra lies entirely within the prostate gland except for the short membranous portion which is between the layers of the triangular ligament. The prostate empties into the floor of the urethra through many small ducts. In addition, there is a raised ridge, the verumontanum on its floor. This structure has on its anterior surface three openings. The uppermost is one-quarter inch deep, and is called the sinus pocularis. Below and on each side are the openings of the ejaculatory ducts which pass through the gland to join the seminal vesicles.

The prostate is a glandulo-muscular organ and so constructed as to offer the richest soil for the growth of the gonococcus.

From this short anatomical description, it may readily be seen that the ideal result in the treatment of acute gonorrhoea is to limit the infection to the anterior urethra where no very important structures are involved.

### What Is Good Treatment?

In beginning the battle against the gonococcus one should consider what is the best plan

of attack. The mucous membrane of the urethra is very delicate and poorly equipped to fight the hordes of gonococci. It should not be insulted with strong irritating solutions which produce a chemical urethritis in addition to the damage already done by the gonococcus. Urethral medication should not be instituted with the sole idea of killing the invading organisms because it is this idea that causes the physician to use strong solutions. Therefore, good treatment consists of mild urethral solutions which are only slightly gonococcocidal but act chiefly by stimulating the reaction of the urethra against the infection.

Astringent solutions such as zinc sulphate should never be used in the presence of gonococci. They retard the immunity processes of the tissues, prolong the infection and produce serious complications.

### Hygiene

Complications often develop because of a failure on the part of the patient to observe certain very important rules of conduct. He should totally abstain from alcohol and avoid all sexual excitement. Physical activities, especially if excessive, should be curtailed during the very florid stage.

It is well to tell the patient how to protect himself and others, stressing the deadly effect of soap and water on the gonococcus. Conjunctival infections can be prevented by warning the patient about the infectious nature of the discharge and the importance of cleanliness of the hands. The diet need not be limited except for the avoidance of irritating foods.

The best type of dressing for the penis is one that is sanitary and comfortable but does not interfere with urethral drainage. The combination suspensory and sanitary bag is very practicable. Gauze but never cotton should be placed in the bag to collect the drainage.

### Oral Medication

The value of drugs by mouth is questionable. Often this type of medication gives the patient a false sense of security and he neglects to return for treatment.

The balsamics, chiefly in the form of sandalwood oil, are in common usage. Nausea, flatulence and backache are often produced which are annoying and can hardly be offset by the slight bland effect in the urine that the drug might have. The alkaline diuretics do seem to allay burning on urination in the very acute cases. Recently pyridium and serenium have been popularized. The latter two drugs in dosage of four tablets daily are of value in controlling the infection. In acute posterior urethritis, the so-called "bladder mixture" will aid in relieving the symptoms of constant desire to urinate and straining. It is composed of tincture of hyoscyamus and potassium citrate in dosage of twenty minims and twenty grains, respectively, every four hours. But if one treats gonorrhoea with oral medication he may expect poor cooperation from his patient and a large percentage of posterior involvements.

### Abortive Treatment

In certain cases of early, acute, anterior gonorrhoea, the infection may be aborted by the use of acriflavine. The treatment must be started within twenty-four to forty-eight hours after the discharge has begun,—before the infection has reached the posterior pendulous or bulbous portion of the urethra. The technic as outlined by Montague Boyd, of Atlanta, is followed. Two injections of acriflavine 1-1000 solution (Boots' preparation) are given daily. It is best given with the patient lying down. One or two drams of the acriflavine is injected into the anterior urethra. The solution is held in by closing the meatus with the fingers. A thin strip of cotton, one inch wide and three inches long, is folded over the penis and a similar piece placed over it. The meatus is released and while holding the penis erect, the acriflavine is allowed to ooze out slowly. The wet fibers of the cotton tend to hold the lips of the meatus together so that the solution will come out gradually, keeping the urethra bathed in it for a period of ten minutes. Usually the gonococci and the discharge disappear in twenty-four to forty-eight hours. These injections are continued for one week. Following this, anterior irrigations of warm potassium permanganate solution 1-5000 are given twice daily. In some cases the patient is given neosilvol in 5 per cent solution to use as an anterior injection twice daily for a few days. Three or four weeks later the urethra should be gently dilated with sounds.

The following case is cited briefly as illustrative of the above method of treatment:

A man, aged fifty-five, was seen three days after exposure. Examination revealed a slight urethral discharge which contained gonococci.

The first glass of urine was hazy and contained a few shreds. Acriflavine injections, as described previously, were given twice daily for one week. Twenty-four hours after the first injection the discharge had disappeared and the urine was clear except for a few shreds. Several daily smears were negative for the gonococcus. The anterior urethra was then irrigated daily for one week with warm potassium permanganate solution 1-5000 and followed by an injection of 5 per cent neosilvol. Three weeks later a 24 French sound was passed down to the bulb. There was no return of the discharge and the urine remained clear.

### Urethral Medication

The ideal method of local treatment is one that is simple, effective and easily carried out by the general practitioner or specialist. For some time, the writer has followed the plan here outlined with very good results and exceedingly few complications. Especially is this true in those cases seen during the first few days of the infection and in those who cooperated during their course of treatment.

After the diagnosis is made, the patient voids. The anterior urethra is then gently irrigated with warm potassium permanganate solution 1-5000. The irrigator should not be more than two and one-half feet above the urethral level so as not to exert excessive pressure. At the beginning of the irrigation, digital pressure is made just behind the fossa navicularis to close off the remainder of the anterior urethra until the meatus and fossa are well cleansed. Following the irrigation the anterior urethra is gently filled with a 5 per cent solution of neosilvol and retained for five minutes. This is best done with a small glass blunt nose asepto syringe. It is important to relax the pressure on the meatus at intervals to allow a few drops of the solution to escape. This in turn medicates that portion of the urethra closed off by the fingers. This treatment is carried out twice daily for two weeks. At this time, there is usually little discharge and the urine is clear except for a few shreds. In some cases, however, it may be necessary to continue the above treatment for three weeks.

The patient is given slides to collect any morning discharge that may be present. Should the gonococcus still be found, the local treatment should be continued until the slides are negative. If there is no discharge at the end of four weeks, the patient is given a week's rest and observed for any return of symptoms.

At this time, a bougie-a-boule the size of the meatus is passed to the peno-scrotal angle. The patient is given a slide and told to collect any discharge present next morning. Four days later, if the slide is negative the bougie is passed to the bulbo-membranous junction and the discharge again watched for. Should nothing be noted, four days later, a 24 French sound is passed down to the bulb and the urethra massaged over it.

With negative findings thus far, it is reasonably certain that the infection is about controlled. Silver nitrate in 1 per cent solution may be injected in the anterior urethra daily for three days to light up any dormant focus. If slides show gonococci, local treatment as described should be given for a few days which usually clears up the focus.

The patient should be observed for a period of three months. It is most important to advise the patient that he may still be infectious and to protect his partner during intercourse.

The urethral mucosa reacts differently to the various drugs and in some cases neosilvol does not seem to stir up the necessary tissue response. In such cases, protargol in ½ per cent solution is given as an anterior injection twice daily. This is continued for a few days until the gonococci have disappeared.

Not every case responds as well as outlined but this is usually due to one of three causes: first, poor drainage from a small meatus, which necessitates a meatotomy at once; second, in very acute, virulent cases of gonorrhoea, especially in blondes, the infection is difficult to control; third, the lack of cooperation from the patient with failure to observe the law against alcohol and sexual excitement.

Many patients cannot afford to be treated by the physician twice daily. This means that the patient must be given treatment that can be carried out by himself. Such a procedure is not without danger, but provided one has an intelligent patient and sufficient care is taken in giving instructions, good results may be obtained. Neosilvol in 5 per cent solution is prescribed as an anterior injection twice daily, preferably on rising and at bedtime. The small two dram glass blunt nose asepto syringe is the best type and the least dangerous. The patient is told to void and then in-

ject the solution gently into the urethra. It is retained for five minutes, allowing a few drops to escape at intervals. The physician should see the patient carry out this plan of treatment to be certain that the directions are followed. Should it be necessary for the patient to be away from his physician for several days, he can easily be taught to examine the first and second glasses of urine. The role of phosphates in clouding the urine and the use of acetic acid should be mentioned also. The symptoms of posterior infection should be described, especially clouding of the second glass of urine, and the patient told to immediately discontinue all local treatment if they develop. In conjunction with this treatment, the patient is seen in the office three times weekly and the treatment carried out as outlined previously. He should omit his morning injection on the day of coming for office treatment.

If the above plan of treatment is strictly adhered to, involvement of the posterior urethra will be seen in only a small percentage of the cases, provided the treatment is begun early. The urine voided in two glasses is carefully watched during the course of the gonorrhoea. At the beginning of posterior urethritis, the second glass becomes cloudy and the symptoms of vesical discomfort develop. All local treatment should be discontinued at once. The patient should go to bed, drink a moderate quantity of water and keep the bowels well open. Hot sitz baths plus a hot-water bottle to the perineum offers great relief. The so-called "bladder mixture" is given every four hours. Opium suppositories at times are of value.

In those cases where the dysuria with straining and burning is marked, great relief may be obtained by instilling 5 c.c. of 2 per cent silver nitrate solution into the posterior urethra. The anterior urethra is first well irrigated with warm potassium permanganate solution 1-5000 and the instillation done with a Keyes-Ultzman syringe. This injection may be repeated in five days if the symptoms continue.

When the patient has recovered from his vesical discomfort, daily bladder irrigations with warm potassium permanganate solution 1-5000 are given. The urethral pressure should be low and extreme gentleness carried out until the patient learns to relax well the external sphincter muscle. These irrigations are continued for a few days. If the second glass of urine remains cloudy, 10 c.c. of 5 per cent neosilvol is injected into the posterior urethra following the irrigation. This may be done with a bulb syringe if the patient relaxes well or by means of the Keyes-Ultzman syringe. After a few days of such treatment, the second glass of urine is usually clear.

Prostatic massage should not be started at this point, as the prostate is usually congested and boggy. Time should be allowed for this process to resolve. At least two to four weeks should lapse before the massage is begun. Much damage is often done by trauma during the massage. By slight rotary motion with the ball of the forefinger, pressure is made over the entire gland. The final stroke is over the urethra in the mid-line to empty the secretion out. The pressure of the massage is gradually increased and it should not be repeated more often than twice weekly. It is well to fill the bladder with potassium permanganate solution 1-5000 before the massage and have the patient void afterwards This method is alternated with instillations of 10 c.c. of 5 per cent neosilvol. The massage should be continued for a period of eight to ten weeks. Smears of the secretion will indicate the response of the gland to treatment. Rest periods of several weeks between the courses of massage are often helpful.

At times, the urethral discharge recurs after the first few prostatic massages. Should this happen, the massage is discontinued and bladder irrigations are given daily, until the discharge disappears. Occasionally a 24 French sound should be passed into the bladder.

If the prostate does not clear up on massage there is probably some lesion in the posterior urethra. This can be cleared up by the application of 50 per cent silver nitrate through the endoscope.

When the prostatic secretion approaches normal, the urine is clear and the passage of a large sound does not produce a discharge, the patient may then be called clinically well. He should be observed over a period of three months and warned that he may still be infectious.

### Conclusions

1. A consideration of the anatomy of the urethra and prostate is important in the proper handling of acute gonorrhoea.

2. Good treatment consists of urethral

medication that is only mildly gonococcocidal, but acts chiefly by stimulating the mucosal response against the infection.

3. Certain hygienic rules should be carefully observed by the patient. The most important are the avoidance of sexual excitement and total abstinence from alcohol.

4. Oral medication plays a minor role, is of slight value, and creates a false sense of security in the patient.

5. Abortive treatment with acriflavine is very effective if treatment is begun within twenty-four to forty-eight hours after the beginning of the discharge.

6. Excellent results with few complications have been obtained with the simple plan of treatment as described.

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## ZINC STEARATE INSUFFLATION, WITH REPORT OF A CASE.*

By ERNEST G. SCOTT, B. S., M. D., Lynchburg, Va.

In February, 1930, I was called to attend an acutely ill little girl who had aspirated some zinc stearate powder into her lungs. This condition, although not found in textbooks on pediatrics†, is a not uncommon occurrence in the nursery. The first reported case was that by Bass[1] in 1919. The same year Boehme reported another fatal case. Fisher in 1920 and Barnett in 1921, each reported one case with recovery. However, it was not until 1922 that any interest was aroused in this subject. In that year Heiman and Aschner[2], of New York City, in a comprehensive article reported twelve cases that one of them had observed, together with autopsy record of their one fatal case and the results of experimental insufflation of zinc in dogs. Following their report, the *Journal of the A. M. A.* commented editorially on this danger to infants. Several other articles appeared in the next year and, in 1923, at the San Francisco meeting of the American Medical Association, a Committee on Accidents from Zinc Stearate Dusting Powders was appointed by the Board of Trustees. This committee, composed of J. A. Abt, W. C. Woodward, and B. N. Leech, made two reports[3, 4] on its work. Their final recommendations were:

"1. That all manufacturers of zinc stearate powder for infants be requested to use a self-closing container of a type which does not lend itself easily to manipulation by an infant, and to place a uniform caution label on the container.

"2. That the use of zinc stearate as a dusting powder for infants be discouraged by the medical profession because of lack of therapeutic evidence of its value."

O'Keefe[5], in 1924, reported six cases from the Massachusetts General Hospital, all of whom recovered. In the following year Conklin reported one fatal case. By 1927 six additional articles had appeared and there were records of over one hundred and sixty cases with thirty-six deaths, a mortality of over 22 per cent.

As a result of the efforts of the American Medical Association, the State of Illinois, in 1926, passed a law providing proper containers for zinc stearate (self-closing) with a caution label and provided a fine of two hundred dollars for failure to comply with the law. So far as is known, no other state has such a law, although Florida contemplated passing one.

As a matter of interest, letters were addressed to ten prominent distributors of medicinal supplies, asking them about zinc stearate. Five stated that they had never marketed it. One stated that they formerly did but discontinued on account of the danger. One markets it in an ordinary can, but stated that they intended very soon to adopt a self-closing container. Three dispense it in self-closing cans with a caution label. Thus it is seen the majority of distributors are using a self-closing container, the direct result of agitation by the American Medical Association. It is to be hoped that the time will come when such accidents as are reported here will never occur. Talcum powder is a much safer dusting powder for infants, since it has not the highly irritant action of zinc stearate. As far as I know there are no recorded instances of talcum powder aspiration causing a fatal outcome.

The accident usually occurs by an infant grabbing the can which has been left lying near and pulling it to the face just as if it were a bottle of milk. A shower of powder is received which causes a cough, followed by inspiration of larger or smaller amounts of powder. There are grave signs immediately. The powder irritates the mucous membrane of the mouth, throat and lungs, causing cough, labored wheezing respirations, often collapse and coma. Many recorded cases are unconscious for long periods following, due to partial asphyxia or to collapse. Cyanosis and labored, asthmatic breathing may alternate with pallor

*Read by title at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

†Abt's System has one short paragraph on the subject.

and shallow respiration. If death does not follow in a few hours from asphyxia, the breathing and color may improve, but the danger is not over. Some cases develop a bronchopneumonia, others rapidly get well. Even in the absence of bronchopneumonia a moderate fever and slight leucocytosis is the rule and the respirations are very rapid. Edmongs'[6] case had a respiratory rate just before death of 104, higher than the temperature. There is usually a croupy cough, and scattered medium moist râles through the lungs. Supra- and infra-sternal retraction during inspiration is common.

As regards the treatment this is directed towards relieving the asphyxia and removing any of the powder that may have been swallowed. Most of the deaths have occurred from asphyxia in the first few hours and we must act quickly. Oxygen inhalation is advisable. Atropine and adrenalin are recommended on theoretical grounds in order to relax any bronchospasm. Gastric lavage, or an emetic like syrup of ipecac, is administered to get rid of any of the powder that may have been swallowed, but it is probable, zinc stearate being practically insoluble, that considerable amounts could be swallowed with impunity. In a good many of the reported cases bronchopneumonia has developed following recovery from the immediate effects of the powder. When this occurs, the treatment is that of this disease.

## Report of Case

Margaret J., two years and eight months old, was found by her mother in acute respiratory distress with a can of zinc stearate on the floor near by and powder on the mouth and face. She was coughing frequently and having great difficulty in breathing. Dr. R. P. Kelly was called. He administered an emetic and sent the child to the Virginia Baptist Hospital. I saw the child at 10:30 P. M., February 21, 1930, five hours after the accident. At that time she appeared acutely ill, with anxious expression, flushed face, rapid, grunting, shallow, jerky respiration and a frequent hacking cough. She complained of her throat being sore. The temperature was 99°, pulse 150 and respiration 60 per minute; there was no cyanosis. Physical examination of the chest was negative. There was dilatation of the alae nasi with inspiration and supra- and infra-sternal retraction. The mother stated the child became unconscious shortly after the accident and remained so for four hours, during which time she was purplish and had periods of labored, wheezy respirations alternating with shallow respirations. The next day there were a few scattered medium moist râles through both lungs and the condition was the same as the night before. No medication was given except syrup of ipecac, strong tea and small doses of codeine and luminal at night. An X-ray of the chest, taken the second day, showed nothing abnormal. On the second day the respirations were 70 per minute and the pulse 160; they never went beyond this point and there was no fever. The third day respiration was easier and cough less, and the fourth day the child was apparently normal except for some hoarseness and still rapid respiration (40) and she was discharged.

## Summary

1. Cases of zinc stearate insufflation continue to occur. This is an acute emergency of infancy.

2. In the treatment, oxygen, atropine, adrenalin, steam inhalations are indicated, but for the severe case nothing is of much avail.

3. It is to be hoped that all manufacturers will adopt a safe self-closing container and that physicians will warn mothers of the danger from this source. Until all manufacturers have adopted such a can, we would do much better to advise mothers against the use of zinc stearate and advise talcum powder.

4. A case of zinc stearate insufflation with recovery is reported.

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## SINUSITIS AND SOME OF ITS CAUSES.*

By THOMAS A. POOLE, M. D., Washington, D. C.

In considering sinusitis I would like to mention the names of some of the men who brought this important subject so prominently before the medical world.

Onodi, as far back as 1906, possibly wrote and delivered the first important paper on this subject at the thirty-third Ophthalmological Congress held at Heidelberg. Again, in 1908, he read another paper on the Optic Nerve and Accessory Cavities of the Nose.

Arnold Knapp wrote on Bilateral Optic Neuritis, after Ethmoiditis, in 1908. Following these three very important papers, H. W. Loeb wrote voluminously on the Anatomical Relations of the Optic Nerve to the Accessory Cavities of the Nose, 1909. And from this time to the present, such men as Hajek, Skillern, Sluder, Van der Hoeve, de Schweinitz, H. H. Stark, F. Billings, J. H. Parsons, G. A. Piersol, including Jackson and Coates, and many others too numerous to mention, have contributed very materially to this subject.

The general concensus of opinion is that these cavities are nothing more than incubators for bacteria to multiply in, when and after the ostium or drainage has become obstructed or occluded. With this occlusion we have anaerobic bacteria development. This character of bacteria produces extensive involvement in surrounding tissues and cavities, the reason being that the mucous membrane of these many cavities is contiguous with one another. Again the venous circulation, we know, is a great conveyer of bacteria, especially as the bony separation of the adjacent structures contains so many dehiscences, and small venous radicles, which form communication between the veins of the mucous membrane of the sinuses and the venules of the dura. If we take only one sinus, the maxillary antrum, we find, on account of the relation of the lining membrane of the antrum to the nasal cavity, other sinuses and the teeth, it is more often diseased than any other sinus. Its ostium is so placed as to be easily blocked by acute tissue changes in the middle fossa of the nose, by chronic hyperplastic conditions of the middle turbinal body, or by direct extension of infection from nasal mucosa. Infection from neighboring sinuses must also be considered. In addition, the floor of this sinus is in intimate relation with the teeth, which may project into the lumen, especially the second premolar and first molar. Like other cavities with a lining mucosa, it is subject to acute and chronic inflammatory changes. As additional etiological causes, we have the infectious diseases, which we can refer to as those with incubation periods,—conditions such as measles, scarlet fever, diphtheria, pneumonia, influenza, etc. Almost invariably you can trace the present condition of involvement of the sinuses from some past attacks of one of these childhood diseases.

The Roentgen ray has become an invaluable aid in the diagnosis of many of these obscure sinus involvements and in discovering foci of infections. Its chief field of usefulness, however, is in the diagnosis of frontal, ethmoid, and maxillary conditions. The evidence obtained by the Roentgen ray of the sphenoid is not as reliable or dependable, but it does give one a good and clear definition of the anatomy, which is of help in operating.

In conclusion, gentlemen, I wish to say that if any of you have the time and opportunity, while visiting London, to call on Sir Arthur Keith, Curator, Royal College of Surgeons, and get his permission to inspect the wonderful collection of Onodi dissections there, you will be well repaid. There one sees medical men from all parts of the world studying this most wonderful collection of actual anatomical specimens.

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NOTE:—The author threw on the screen some thirty or more pictures, demonstrating the assistance of the X-ray, both in diagnosis and in determining end results.

*Presidential Apartment,*
*16th and L Streets, Northwest.*

*Read before the Medical Society of the District of Columbia, Section on Ophthalmology, Otology, and Laryngology, October 17, 1930.

Discussed and criticised by Drs. Bennett, Bailey, Davis, Gill, Trible, and Flynn.

## TREATMENT OF PELLAGRA.*

By C. C. JOYNER, M. D., Farmville, N. C.

In 1912, under authority of the Surgeon General of the United States Public Health Service, Goldberger began the fundamental investigation into the cause of pellagra, which is still going on although Goldberger is dead. These investigations have brought something like order out of the chaos that had prevailed up until that time. Prior to the investigations

*Read before the Seaboard Medical Association of Virginia and North Carolina at its annual meeting in Elizabeth City, N. C., December 2-4, 1930.

of Goldberger and his associates in Kentucky, Alabama, Georgia, and South Carolina, there were almost as many theories as to the cause of pellagra as there were physicians called upon to treat it. Almost everything from evil spirits to corn bread has been accused. Since the etiology of the disease has been established, the treatment has been greatly simplified and made far more scientific.

Since the disease is unquestionably due to some dietary deficiency, the obvious procedure is to supply the lacking factors to the diet. Naturally, then, the treatment of the disease falls under three heads, namely, dietary, hygienic and drugs, named in the order of their importance.

To meet with gratifying results, a complete change in the dietary of the patient is absolutely imperative. All fried food should be forbidden. All salt meats, fish, etc., should be interdicted, and no cured meats of any kind are allowed. He should have plenty of eggs, milk, fresh meats, fish, chicken, liver, and, in fact, any kind of fresh meat. Fresh vegetables, cooked and raw cabbage, beans, peas, turnips, turnip greens, mustard, spinach, tomatoes, onions, beets, okra, green corn, squash, etc., as also white bread, whole wheat bread, corn bread, graham bread, rye bread, all of which must be fresh, may be given freely. Again I should say that no salted meat is to be allowed, and very little salt should be used in serving the food. Sodium chloride has no place in the dietary of the pellagra patient. I have demonstrated this to myself many, many times in numbers of patients. Canned vegetables may be used when the fresh are not to be had, but they are far inferior to the fresh. All kinds of ripe fruit may be taken freely. Tea and coffee should be given sparingly; fresh milk and fresh water are the drinks for the pellagrin.

During the winter the signs and many of the symptoms of pellagra disappear, and the patient is apt to think he is well, and will return to his old diet of salt fish, salt fried meat, dry half-cooked bread, etc., with disastrous results to himself. All pellagra patients should, therefore, be cautioned to use extreme care in selecting the winter food. All meats should be thoroughly cooked, preferably stewed or baked; fried meat is bad for the pellagrin.

The investigation of the Public Health Service would seem to show that canned salmon and canned haddock have considerable pellagra preventing properties. My experience with these foods, however, is meager. I have had two patients on canned Alaska salmon this past summer and they both seemed to do well; all the symptoms cleared up promptly under salmon, milk and eggs, no other meats being used.

Some patients when first seen are so far gone that they cannot take solid food on account of the sore mouth which is sometimes extreme. These cases must be given rich soup, fresh milk and soft cooked eggs, in small quantities at frequent intervals, until they can take solid food. I have had no experience with yeast.

The hygienic treatment requires that the patient be kept clean and comfortable. A daily warm bath with a change of bed and body linen will keep him clean. The mouth, nose, eyes, and ears should be carefuly looked after and kept scrupulously clean. At the first sign of any inflammatory condition, appropriate treatment should be carried out. A saturated solution of boric acid in camphor water will usually suffice for the nose, ears, and eyes. The mouth requires different treatment.

Now, last, the drug treatment. There are not more than half a dozen drugs that are of any value in the treatment of pellagra. Many specifics have been vaunted, but they are all useless. The very etiology of the disease precludes the possibility of such a thing. In fact, drugs have but a small place in the treatment of pellagra.

In the beginning of the trouble a complete change in the dietary from those foods which induce pellagra to those that prevent and cure it is all that is necessary. When, however, the disease has so far progressed that the patient is weakened and run down, the vitality greatly depressed, and the natural forces of resistance and repair broken and scattered, so that disease-producing organisms find many portals of entry, then the disease is pellagra with complications. The abraded mucous membrane offers an inviting field to countless germs. The broken and denuded skin offers no resistance to infection of any kind. These infections are not pellagra; they are accidents in the course of the disease, complications which must be recognized and treated as such. Remember you are dealing with a person suffering from an unusual form of starvation.

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Usually the patients first seek relief from the skin eruption or some digestive derangement. The skin eruption is a true dermatitis and requires some soothing application, as, for instance, the oxide of zinc ointment or an ointment composed of 20 per cent thymol iodide in lanolin. For the sore mouth a wash of phenol 1 per cent, with chlorate of potash 4 grs. to the drachm, glycerin and water. This should be used every two hours through the day to thoroughly wash mouth and throat. It should not be swallowed. If the patient is too weak to use the wash, a mop or applicator may be used to apply it. For the inflamed mucous membrane of the alimentary canal, I usually prescribe the following: Tincture ferric chlorid 8 minims, chlorate of potash 4 grs., elixir maltopepsin or panpeptic elixir 1 drachm, water 1 drachm,—two teaspoonfuls to be given in water before meals. As a systemic tonic I usually prescribe something like the following capsule: Cerium oxalate 4 grs., powdered extract nux vomica ¼ gr., arsenic oxide 1/12 gr., calcium sulphide 2 grs.,—to be given after meals.

Arsenic is perhaps more generally prescribed than any other drug, but has no specific action in pellagra more than it has in any other wasting disease. I have given arensic intramuscularly, intravenously, and by mouth, and the latter route is as good as any. In my experience the newer arsenicals have no advantage over the older preparations. The diarrhea, which is sometimes severe and intractable, is best controlled by equal parts of laudanum and aromatic sulphuric acid. Fifteen to twenty drops is the dose of the mixture. These patients seem to take larger doses of opium and its derivatives than most other patients. As the diarrhea improves, I usually decrease the amount of laudanum and increase the amount of acid. The tincture of opium seems to have a decidedly beneficial effect on the mental symptoms of those patients showing involvement of the central nervous system.

There is just one other complication of pellagra I shall mention, namely, vaginitis and endocervicitis. This is a very grave complication and requires frequent douches of antiseptic solutions, as lysol or creolin. Pads should be placed under patients to catch the discharge, and should be changed often.

## THE MANAGEMENT OF OPEN SAFETY PINS IN THE AIR AND FOOD PASSAGES.*

By E. G. GILL, M. D., Roanoke, Va.
Department of Bronchoscopy, Gill Memorial Eye, Ear and Throat Hospital.

Before attempting to remove a safety pin from the air or food passage, the same preliminary study and preparation is carried out as in other foreign body cases, namely:

1. Complete history. 2. Physical examination. 3. Mirror laryngoscopy. 4. X-ray. 5 Esophagoscopy or bronchoscopy. Due to the size of the pin, most of them lodge in the esophagus or bronchi with the point up. The removal in this position offers a most difficult and dangerous problem. The method used depends upon the size of the pin, age of patient, and location in the esophagus. The majority of all foreign bodies lodge at the level of the crico-pharyngeus muscle. Only one portion of the pin can be seen at a time through the esophagoscope and the keeper is usually the presenting portion. If traction is made, fatal trauma will be done.

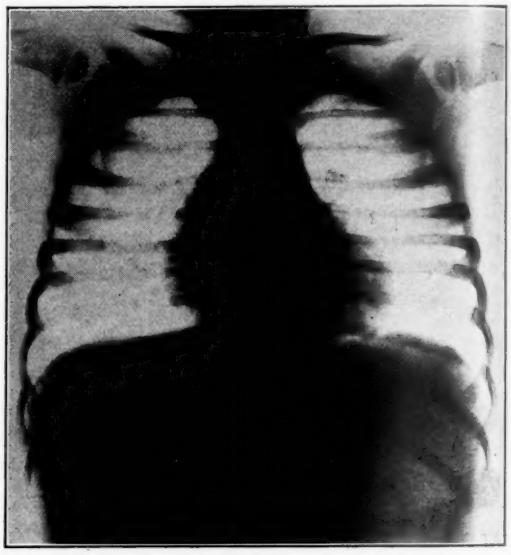

Fig. 1.—Patient, age three. Open safety pin in cardiac end of the esophagus. Passed through the intestines in thirty-six hours.

Ample time is always given to study each case carefully. Nearly every safety pin with point up will pass into the stomach and through the intestines without inflicting

*Read before the sixty-first annual meeting of the Medical Society of Virginia, at Norfolk, October 21-23, 1930.

trauma. I would like to emphasize the very serious complications which will probably follow blind efforts at pushing sharp pointed objects through the esophagus. It is not unusual to hear physicians say that they pushed the pin into the stomach with a rubber tube. Surgically speaking, the esophagus is the most intolerant structure in the human body, and when one practices blind bouginage, disaster is to be expected.

Fig. 2.—Patient, age nine years. Open safety pin in larynx.

The medical and lay literature often gives account of a gastrostomy having been performed for the removal of a safety pin. These operations, in many cases, are done in a few hours after the pin has been located in the stomach. It is safe to wait three weeks for an open safety pin to pass out of the stomach when repeated radiograms show the pin in different positions. If the surgeon will wait a few hours or days, he will often find that a spectacular and dangerous operation will not be necessary. An open safety pin with the point up can be removed with safety by bringing the pointed shaft into the esophagoscope and withdraw the pin, forceps, and esophagoscope with the keeper and its shaft sliding along side the tube. An open safety pin with the point down offers no particular mechanical difficulty in removal.

An open safety pin in the trachea or bronchus point downward, can easily be removed. When lodged point upward, the same care must be exercised in preventing traumatism as in case of the esophagus. The point should

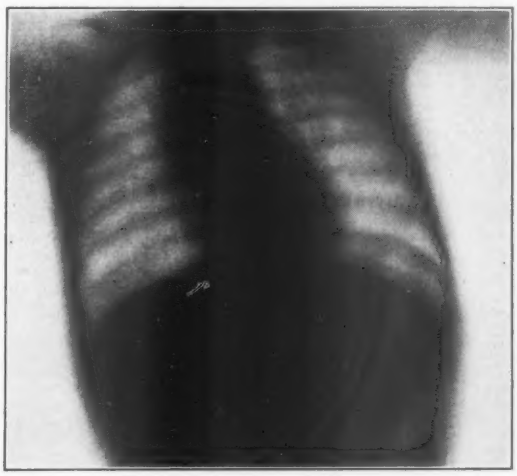

Fig. 3.—Baby, age six months, safety pin in esophagus, upper one-third, point down. Removal with the esophagoscope.

always be sheathed by bringing it into the bronchoscope. In case of large safety pins, a preliminary tracheotomy is sometimes indicated. Large objects are often stripped off when drawn through the larynx. This complication may cause sudden death by asphyxiation.

### Conclusions

1. It is dangerous to push any foreign body blindly through the esophagus, and very dangerous when the foreign body is an open safety pin.

2. Gastrostomy for the removal of an open safety pin should not be performed under three weeks if daily radiograms show the pin in different positions.

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## RHEUMATISM — OPENING OF ROUND-TABLE DISCUSSION.*

By D. B. STUART, M. D., Dublin, Va.

It has been a time-old adage that to move a mountain, or to change the course of a mighty stream, were projects beyond the scope of human ability. A rapidly advancing scientific world, developing mechanical aids that respond to the control of man, has, however, changed this situation, and now man in his inestimable smallness is able to change a landscape to suit an individual taste or reason. So

*Read before the Southwestern Virginia Medical Society, at Christiansburg, Va., September 23-24, 1930.

far as I have been able to discover, there has not been developed any such aid to help the novice with the gigantic task with which I now find myself confronted. To peruse the mountains of literature, to sail through the confusion of seas whose waves lap on the shores of uncertainty, and to fly over the extensive scope covering the subject assigned, is at first sight an impossible task, and can, at best, but entertain speculation. To assimilate the information at hand, to collect the nuggets of thought into that retort from which at terrific temperatures created by effort must flow the condensed subject matter of a potency not warranted, is an allotment that one need offer no apology for his effort. To open the discussion is therefore my sole object, and for the wealth of material that exists to be brought out by general discussion, is my single aim.

To attempt to classify the etiology, pathology and types of rheumatism brings forcefully to one's mind the very significant fact that we of the medical profession are guilty of an almost unpardonable crime in allowing the present nomenclature to continue to exist. Rheumatism is a term in general use by the laity and, sad to relate, by a large part of a profession that should know better with the great advance made by modern medicine in the last generation. When one term is used to describe several conditions that are not at all similar in their distinguishing characteristics, and they involve so many different portions of the body, then indeed have we a situation that, to my knowledge, has no parallel in the practice of medicine. Rheumatism has been known by many other names, and no serious effort has been made to confine the use of the name to any sharply defined disease, but rather to include the whole category of "rheumatoid" affections, many of which have nothing in common with each other.

Rapidly and obviously summarizing the condition, I will list the different organs and parts of the human body involved:

First, the most common condition encountered is found in the bony articulations. This may be localized or general, depending upon the type or severity of the affection.

Second, we have muscular conditions that bear a diagnosis of rheumatism. Thus are listed the lumbagoes, intra-muscular and other forms of muscle disturbance.

Third, some of the ambiguous disturbances of nervous tissue are included under the present nomenclature, such as sciatic rheumatism, chorea, etc.

Fourth, certain systemic disturbances associated with a blood-stream infection, with the circulatory sequelae that are usually present, such as acute rheumatic fever, with or without endocarditis, are included.

Then, from a viewpoint of etiology, the most widely accepted offender is an open or concealed focus of bacterial contamination. This may be produced by oral sepsis, an alveolar abscess, infected tonsils, diseased prostate, or a sinus or biletract infection. These can be used to explain the origin of the toxic products which may be the causative agent of either acute or chronic conditions. But how disappointing this reasoning is, for, after these and many other points of infections have been thoroughly investigated and the positive ones apparently eliminated, the victim in a large number of cases makes no response, or grows progressively worse. It behooves us, therefore, to seek still further for other causes. Many, perhaps, can have more or less light thrown upon them by taking into consideration such factors as heredity, sex, climate, age with changing circulatory conditions, improper or faulty nutrition, and faults of environment. Yet, after searching with microscopic lenses with patient and painstaking effort, a large percentage of cases will pass through the hands of skilled diagnosticians with relief unobtained, largely, perhaps, because the etiology has not been discovered. To remove the cause must be in this, as in all other ailments, the keynote for success in ridding the human body of the pathology associated with the train of symptoms found. This leaves open the large field of diseases in which rheumatic symptoms are found in close association, and ofttimes the latter will be the only or at least the chief complaint given by the patient. Thus, careful search may reveal an unsuspected anaemia, syphilis, gonorrheal blood-stream infection, a tuberculous condition, traumatic states, or cases of foot or muscular strains with associated lack of muscle harmony or balance, and even certain cerebro-spinal, purpuric or scorbutic involvements. To be able to remove any of these causes serves not only to alleviate the sufferer, but also strengthens and renders clearer a diagnosis that, previous to such, could at best be listed only as ambiguous and with a large and

unsatisfactory element of conjecture. All of the above has been for almost untold generations the ground that has been searched, explored, and subjected to severe analysis and discussion, but has as yet not given up all of its secrets, and probably never will. This brings us to the realization that much is yet in the dark concerning the subject, and in this darkness there has been born in the mind of many an investigator the suspicion that, should all be found in the foregoing fields, still the etiological knowledge would not be complete.

So, as the result of this suspicion, in the last few years many of the more acute observers have entered virgin ground, and the fruit of their efforts has opened up a new vista which the great bulk of the medical profession are slow to accept. This is the field of endocrinology in which the many errors of glandular function, when subjected to closer inspection, have thrust themselves upon us as a possible cause for many of the trains of events found in the condition we are discussing, which makes it seem more than ever that it might be called a symptom-complex. Thus, we find the cases with rheumatoid complaints that appear at or approaching menopause, and less often, but still enough to be definite, a similar train of events in the young girl preparing for puberty. Then, again, the often present, but seldom recognized arthritis that appears either as an early or late symptom of thyrotoxicosis. Who knows but that the aged male, who is so incapacitated by muscular or bony involvement, is not the victim of a senile prostate or testicle that no longer supplies him with that uncertain internal secretion that may be so necessary to keep him supple, active and graceful?

The pathology involved in our subject is so wide reaching in its scope, so well known in general, and has crept into this discussion in so many places, that I will make no attempt to discuss it at any further length. Anything that is left out will probably be thought of in general discussion.

In closing, let me emphasize that no claim is made for having tried to include everything in this discussion of the subject matter under consideration, but rather to skim the surface here and there, so that those who are so inclined may choose those tiny abrasions made in that surface and enlarge it to their satisfaction or limit of knowledge. No claim is made for any extensive search of the literature or to classify the views of any one person or group of persons, but merely to perform that duty imposed upon me by opening the subject up for general discussion by each and every one of you present.

Thus comes to an end this ramble of disconnected and perhaps incoherent ideas, and I will close with the statement that it is my humble opinion the medical profession should discontinue the use of the word rheumatism. If they must use it as a diagnosis, break it up into its component elements, and classify each with the pathology involved used adjectively. If not, choose with care a more suitable word that is more satisfactory for the case at hand. It is my own conviction, offered in puny resistance against the recognized acclaim of those who will disagree, that rheumatism is never a clinical entity, but merely a symptom or sign of some other underlying body dysfunction or disease. Thus, it might be classed with the rose-spots or the tympanites of typhoid, the rigidity and tenderness of appendicitis, the obvious edema of advanced nephritis, or the classical or cardinal symptoms of many another disease. This, to repeat, is, however, only my own personal conviction, and perhaps will not bear the strain of rigid scientific scrutiny.

## RHEUMATISM.*

By R. F. THORNHILL, M. D., Pulaski, Va.

The subject of rheumatism is very indefinite. No attempt will be made to classify, define or respond to the various questions which may arise in the discussion.

Rheumatism is a disease of undetermined *etiology*. The acute disease is fatal only in a small proportion of cases, 3 to 5 per cent. The cardiac sequelae are among the most important of medical conditions.

The *diagnosis* must rest upon direct consideration of symptoms, signs, and course of disease, and elimination of other conditions, as there are no characteristic or definite laboratory tests, except where purulent fluid can be obtained. The organism in such cases can be demonstrated by laboratory tests with the aid of the microscope.

*Treatment and Therapeutic Indications:* Absolute rest in bed, relief of pain by drugs, and local heat—preferably electric,—and comfortable position of the affected parts are necessary. As to nutrition, large amounts of fluids

*Read before the Southwestern Virginia Medical Society, at Christiansburg, Va., September 23-24, 1930.

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and high caloric, but easily assimilated diet, are important.

Compounds of salicylic acid, morphine or one of its derivatives, are among the more useful drugs. Digitalis, one-half dose in cardiac insufficiency due to the toxicity of the drug in such patients, is important at times.

*Surgical Indications:* All foci of infection should, if possible, be removed, such as tonsils, abscessed teeth, or any focus that may be located.

*Convalescence:* The rate of recovery is in ratio to length and severity of illness. No patient should be allowed out of bed until free of fever, and the heart rate fairly slow, with the weight curve to practically normal. Neither should antipyretics have been administered for at least a period of two weeks.

## PHRENICOTOMY IN THE TREATMENT OF SUPPURATIVE PULMONARY DISEASE.*

By C. P. CAKE, M. D., Detroit, Mich.

Paralysis of one-half of the diaphragm by interruption of the phrenic nerve in the neck for the treatment of both tuberculous and non-tuberculous suppurative disease of the lung is a procedure which in recent years has attracted more and more the attention of the medical profession.

Originally suggested by Stuertz in 1911 and later by Sauerbruch in 1913 as a measure especially indicated when there is a tuberculous or bronchiectatic cavity in the lower lobe, as experience with it has increased, its field of applicability has steadily widened. Now it is being used with a fair measure of success in many far different types of disease from those for which it was first suggested.

Paralysis of the diaphragm on one side elminates the pumping motion on that side and causes that half of this muscle to immediately assume the position of full expiration. As the muscular atrophy progresses in the paralyzed half, it gradually becomes thinned out and stretched. As this occurs it is forced upward by the negative pressure in the chest, the elasticity of the lung and the intra-abdominal pressure. Unless the diaphragm has become thickened and fibrotic, due to inflammatory changes, or the lung is indurated and inelastic, a quite considerable elevation takes place, as a rule.

By this elevation of the diaphragm, it is estimated that, when the maximum has been attained, in the average case the volume of the lung is reduced about 25 per cent.

The relaxation afforded the lung by paralysis of the diaphragm and its subsequent elevation is not confined to the basal portions as was first supposed. It takes place in all portions fairly equally, but it is greatest where the elastic tension is greatest, as, for instance, where there is shrinking fibrous or scar tissue. Also, it has been demonstrated by Sewall, of Denver, that the diaphragm, by its pumping motion, is largely responsible for the motion of the lung in the apical region. As this is the most common site of tuberculous infiltrations, paralysis of this muscle will afford rest where it is so frequently needed.

The clinical and anatomical effects of phrenicotomy are similar to those of artificial pneumothorax and thoracoplasty, though less marked because the relaxation afforded is less marked.

Due to a modification of the blood and lymph circulation which takes place in the lung, the motion and volume of which is diminished, there is a reduction in the spread of toxins from the lesion in the lung. Therefore, within a short time the temperature, pulse and general condition of the patient are often much improved.

The cough and sputum are frequently markedly diminished after a short time. Contrary to what might be expected following paralysis of the diaphragm, we have observed that the sputum is raised more easily and, therefore, the coughing is less violent. This improved drainage hastens healing and reduces toxic absorption from excretions. It also diminishes the danger of spread of the disease by aspiration of infective material into healthy portions of the lung.

Healing of the lesion is favored by the rest afforded the lung and the improvement in the general condition of the patient. When there is cavitation, the cavities are often closed. Whether or not a given cavity will be closed by this procedure depends, of course, upon its size and the rigidity of its walls. Obviously the limited relexation afforded by the elevation of the diaphragm cannot be expected to close very large cavities or cavities with thick indurated walls. However, small or moderately

*Read by title at the sixty-first annual meeting of the Medical Society of Virginia, in Norfolk, October 21-23, 1930.

large thin-walled cavities and moth-eaten areas are frequently obliterated.

The conditions for which phrenicotomy has been employed with greatest success are pulmonary tuberculosis and pulmonary abscess. It has been used with less success in the treatment of bronchiectasis. It will be the purpose of this paper to discuss the indications for its employment in these conditions.

Because of its relatively recent development as a therapeutic measure, the indications for the use of phrenicotomy are, as yet, not clearly defined. As with all new procedures, it has its adherents and its skeptics. Claims have been made for it which are all out of proportion to what might reasonably be expected from it, and, on the other hand, it has been the object of criticism which it does not seem to deserve. We believe, however, that it has proven its value in certain types of pulmonary disease.

The indications for its employment will be considered separately for each of the three conditions named above: First, tuberculosis; second, pulmonary abscess; and third, bronchiectasis.

Tuberculosis.—As we understand the indications for the use of phrenicotomy in pulmonary tuberculosis, they fall under three headings: First, as a sole therapeutic measure; second, as a supplementary measure to artificial pneumothorax; and third, as an adjunct to thoracoplasty.

When we say phrenicotomy as a sole therapeutic measure, we mean that it is the only surgical procedure employed. No form of surgery that is used in pulmonary tuberculosis should be thought of as excluding or replacing bed-rest and hygienic management. Phrenicotomy is a supplementary measure done to afford additional rest and improved drainage to the diseased lung.

As a sole therapeutic measure, then, it has a very definite value. In certain cases of limited disease, it may be used to the exclusion of artificial pneumothorax. It has an advantage over the latter in that it is accomplished at one sitting and, therefore, eliminates the necessity for the patient to return for refills over a long period of time and avoids all danger of the complications which sometimes attend artificial pneumothorax.

It would obviously be unwise to rely upon the limited relaxation afforded by the former when there is extensive cavitation or infiltration of the lung and artificial pneumothorax could be done. However, there are many patients who present lesions of a type for which, in the past, artificial pneumothorax has been done, but which in reality require no more relaxation than that afforded by phrenicotomy.

In making the decision whether to do phrenicotomy or artificial pneumothorax, several factors must be considered. First, as has already been said, is the question of the extent and character of the lesion. A lesion which is acute and exudative, and of considerable extent, and one which shows extensive cavitation, both require more relaxation than can be expected from paralysis of the diaphragm. Therefore, they should not be trusted to this procedure alone. On the other hand, a productive lesion of moderate extent, without visible cavitation or with one or two small cavities or a moth-eaten area, which shows a slow progressiveness or an early exudative lesion of limited extent may be treated by it with a reasonable hope of obtaining a good result.

The second factor which should be considered is the age of the patient. Because of the rapidity with which pulmonary tuberculosis progresses in young people, when a case presents itself that is suitable for either of the two forms of treatment under consideration, it is best to give the diseased lung the benefit of the maximum relaxation. Therefore, in patients under twenty years of age artificial pneumothorax is preferable to phrenicotomy whenever it can be done.

It must be remembered that there can be no hard and fast rule adopted in making the decision between the use of phrenicotomy and artificial pneumothorax. There is always present in the background that unknown quantity—the resistance of the patient to the disease. As we have no true measurement of that, in every case our best judgment must be our guide, and that is always fallible. However, we do know that many patients with pulmonary tuberculosis can be cured when given the benefit of phrenicotomy, and we are often happily surprised at the way our less hopeful cases respond to it. Therefore, unless we let our enthusiasm befog our judgment, we can feel reasonably sure of obtaining a good measure of success in using it in apparently suitable cases as a substitute for artificial pneumothorax. In any case, if artificial pneumo-

thorax has been tried and found impossible of accomplishment, phrenicotomy should be done.

Unlike artificial pneumothorax and thoracoplasty, phrenicotomy does not require the complete or almost complete integrity of the contralateral lung. Therefore, in certain bilateral cases of febrile and rapidly progressive pulmonary tuberculosis, it may be used on the worst side. The outlook in these cases is not so good but it is not hopeful anyway, and sometimes startlingly good results are obtained. Even if this does not prove sufficient to cause an arrest of the disease, the reduction in the toxemia may enable the better lung to improve to such an extent that artificial pneumothorax or thoracoplasty can be employed later.

In chronic bilateral cases which show a slow progressiveness and little promise of becoming arrested without the employment of some special form of treatment, the relaxation afforded by the paralysis and rise of the diaphragm on the worst side is frequently the deciding factor in converting an otherwise hopeless case into an arrested one.

Then, there are certain individuals who, having achieved an arrest of their tuberculosis under sanatorium treatment, lack the moral stamina to continue a proper regulation of their habits after leaving the sanatorium to prevent a relapse of their disease occurring. In these, phrenicotomy on the side where the disease was worst is indicated as a safeguard to the patient after his release from supervision. The limitation of pulmonary activity thus afforded may be regarded as enforced rest and lessens the danger of reactivation of the disease.

The chief usefulness of phrenicotomy when used in conjunction with artificial pneumothorax is in those cases where there are adhesions between the lung and the diaphragm. In these the paralysis and rise of the diaphragm definitely enhance the effectiveness of the pneumothorax. The elimination of the pumping motion makes a better immobilization of the lung possible, and the elevation aids in producing a better collapse. When there are also other adhesions between the lung and the chest wall, relaxation of the diaphragmatic adhesions relieves the tension on them, and thereby frequently permits the closure of cavities which because of them have been held open. In cases of this kind which are complicated by hemoptysis, this releasing of tension on the adhesions is very efficacious in stopping the hemorrhage. When the tension on the diaphragm is producing a persistent, irritative, non-productive cough or pain, relief may be obtained from the use of this procedure.

A valuable use for phrenicotomy in conjunction with artificial pneumothorax is observed in cases in which the lung is being allowed to re-expand at the termination of the treatment. When there was extensive cavitation and infiltration of the lung before the artificial pneumothorax was begun, it is preferable to limit the expansion to prevent the reopening of cavities and tearing open of shrunken tubercles. This the reduction in the volume of the hemothorax produced by the rise of the diaphragm makes possible.

Then, in certain cases in which the pneumothorax has been maintained for a long time the lung will not re-expand to its former limits and, as the air is absorbed, displacement of the mediastinum results. If this is extensive, dyspnea, pain and circulatory embarrassment may result. Here again the reduction in the volume of the hemothorax is of value.

When phrenicotomy is used as an adjunct to thoracoplasty, the chief benefits are derived when it is done preliminary to the latter operation. The improvement in the patient's general condition which results from it is a valuable aid because they are, as a rule, none too good risks anyway, and it occasionally occurs that the improvement is so great that the larger operation is rendered unnecessary. Then, too, when the disease is chiefly in the apex it may make only the resection of the upper ribs necessary.

Pulmonary Abscess.—The second condition for which phrenicotomy may be used is pulmonary abscess. Here again it must not be thought of as excluding or replacing the traditional forms of treatment. It is simply used as a supplementary procedure to bed-rest and postural drainage. In these cases it is valuable because it provides additional rest to the diseased lung and improves drainage. The reduction in volume of the lung also aids in closing the abscess cavity.

Not so long ago, artificial pneumothorax was looked upon with considerable favor in these cases. However, the frequency with which it

is followed by rupture of the cavity wall and spilling of its contents into the intra-pleural space with the production of empyema has discredited it. Also, collapse of the lung around the abscess cavity sometimes interfered with rather than improved drainage, and the pus became locked up in the cavity. Therefore, at the present time, unless the abscess cavity is centrally located in the lung, it is thought unwise to employ artificial pneumothorax.

On the other hand, while the mechanical effects produced by phrenicotomy are practically the same as those produced by artificial pneumothorax, though less marked, the results from the use of the former in the treatment of pulmonary abscess have not been marred by these complications. These mechanical effects are theoretically ideal for the treatment of this condition and, therefore, we believe that phrenicotomy is indicated. The cases which we have observed under this form of treatment have justified this belief.

Why there should be this difference in the results obtained from the use of two forms of treatment, the effects of which differ only in degree, it would be difficult to say. However, this difference in degree may be the important factor in that the circulation in the lung is disturbed less by phrenicotomy than by pneumothorax and, therefore, the lung is given the benefit of improved drainage, additional rest and the closure of the abscess cavity without such a marked disturbance of the blood-supply.

Bronchiectasis. — Phrenicotomy has not been as successful in the treatment of bronchiectasis as it has in the other two conditions which have been discussed. Certain benefits have been observed in some cases but few, if any, cures have been made.

However, it is indicated when the patient has a basal bronchiectatic cavity which is difficult to empty. The improved drainage afforded by the elevation of the diaphragm tends to aid in accomplishing this and thereby renders the cough less violent and the sputum less offensive. Hemoptysis in these cases may often be stopped by this procedure.

As to the type of operation best suited in the three conditions discussed it must be remembered that when the phrenic nerve is crushed, its function is restored in from six to twelve months. When it is avulsed, with all of the accessories, the paralysis is permanent.

In tuberculosis, six to twelve months is too short a time to expect a pulmonary lesion to heal completely, especially if there are excavations. In pulmonary abscess, on the other hand, this length of time should be sufficient. In bronchiectasis, it is very doubtful that bronchiectatic cavities become cured at all, and as the chief benefit is the mechanical one of improved drainage, it should be made permanent.

Therefore, in the treatment of pulmonary tuberculosis and bronchiectasis, the operation of choice is avulsion of the phrenic nerve and its accessories, if any, producing permanent paralysis of the diaphragm on one side. In cases of pulmonary abscess, on the other hand, simply crushing the nerve and its accessories is the preferred operation.

*Herman Kiefer Hospital.*

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## LIPIODOL INJECTION OF UTERUS AND TUBES—DIAGNOSTIC AND THERAPEUTIC VALUES.*

By GILBERT F. DOUGLAS, M. D., Birmingham, Ala.

Until a few years ago the study of uterine and tubal pathology was quite limited, so far as the X-ray was concerned, in being able to visualize these organs.

The study of Rubin and others by inflating the tubes to ascertain their patency with oxygen or carbon dioxide gas aroused a great deal of interest in the study of sterility, for by this method the patency of the tubes was determined, which hitherto was not; but with this being accomplished, still the location of the tube, or if obstructed, the exact location of the occlusion could not be determined unless at the time of operation the tubes were probed or gas or air was injected.

In 1922, Sicard and Forestier,[1] of Paris, after experimenting with lipiodol (40 per cent solution of iodine in poppy seed oil), by injecting into the tissues, finding it to be non-irritating, then injected it into the spinal canal to aid in locating tumors of the spinal cord. They injected 1 to 2 c.c. of lipiodol into the spinal canal without any injurious effects.

In 1923, Sergent and Cottentot[2] first studied dilatations of the bronchi and bronchiectasis in adults by intratracheal injections of lipiodol

*Presented before the Chattahoochee Valley Medical and Surgical Association in Albany, Ga., July 8, 1930.

through the crico-thyroid membrane; they reported no ill effects.

About the same time, Armand-Delille[3] and associates applied the same method in children.

In October, 1925, David H. Ballou,[4] of Montreal, in a preliminary report on the use of lipiodol in lung conditions, stated it was rapidly eliminated by coughing or absorption from the alveoli, and no ill effects were noted.

In 1926, Dr. Forestier, of Paris, came to this country and demonstrated his uses of lipiodol. Following these demonstrations of its uses in spinal canal, sinus, lungs, etc., Dr. Quitman U. Newell,[5] of St. Louis, used it by injecting the uterus and tubes for diagnostic purposes. The value of this diagnostic method is obvious to every one doing gynecological or any other line of work where the question of patency of the tubes is to be considered.

The question of sterility in women is one that always meets with baffling proportions, both to the physician who is trying to first satisfy his own mind, and, secondly, the mind of his patient as to just why she cannot become pregnant.

After a complete physical examination to eliminate all possible causes, then eliminating any fault of the husband, we are face to face with the problem as to whether the tubes are open. With gas or air inflations we have been able to determine the patency, but not to visualize the tubes, and, if occluded, note the exact location of obstruction before operation. With lipiodol injections we have a method of diagnosis by which we can study the uterus and tubes as we do the kidneys and ureters in pyelograms.

The technic is comparatively simple if proper aseptic precautions are used. The instruments needed are (1) tenaculum forceps, (2) 10 c.c. Luer syringe, (3) uterine sound, (4) Keys-Ultzman urethral cannula with a rubber tip (which acts as a plug to prevent the lipiodol from being expelled from the uterus before X-ray is made), (5) sponge forceps, (6) Graves' bivalve speculum, (7) medicine glass with tincture of iodine, (8) cotton balls for cleansing and application of iodine.

Technic: Patient is placed on X-ray table in lithotomy position, draped as for gynecological examination; speculum is then inserted, the cervix exposed, and painted with tincture of iodine. Posterior lip of cervix is grasped with tenaculum forceps, when the uterine sound is gently passed through the cervical canal to rule out obstructions that would prevent cannula passing through. Cannula is then passed into canal for 2 or 3 c.m., bringing the rubber tip tightly within the external os to prevent solution flowing back as it is being injected into the uterine cavity and tubes. With the syringe filled with the lipiodol (which has just previously been heated to make more liquid), about 6 to 8 c.c. (this being determined by size of uterus) is injected. The patient can tell you if pressure is too great, causing pain. When injection can be continued only under high pressure, it is evident that the cavity is filled. Hold cannula with solution in place. The X-ray picture is then made. Film should be placed in developer at once to see if all right before removing cannula, which would allow solution to flow out into the vagina. If picture is all right, patient may go home immediately. This work may be done in your X-ray room, office, or hospital. I have seen no ill effects other than cramping, as a dysmenorrhea.

In addition to the very valuable aid in diagnosing as to sterility, this procedure proves very valuable in the diagnosing of pelvic pathology in pyosalpynx, hydrosalpynx, etc. If the tubes are not closed at their proximal ends, in the cornu, the solution will pass out into the tubes and can be visualized by the X-ray, showing just the location of obstruction, which is helpful if operation is done later.

I am not going to discuss in this paper, but merely mention, the very valuable help of iodized oil injections of the uterus and tubes in conjunction with pneumoperitoneum in diagnosing uterine, tubal or ovarian troubles, with the X-ray. This method can bring out the details of pelvic pathology almost as clearly as seen in the study of the gastro-intestinal tract, gall-bladder or chest. Stein and Arens[6] have contributed a great deal to this field.

After injection of iodized oil or lipiodol into the uterus and tubes, this fact should be conveyed to the X-ray man if there should be subsequent pictures made of the pelvis or abdomen within a few weeks following the injection, for the media will cast a shadow until it has time to become absorbed, which is at times a number of weeks.

Patients should be re-rayed within a few hours or a day or so after injection to determine if the lipiodol has passed through the tubes into the free peritoneal cavity.

Some of the contraindications to the use of this method of diagnostic procedure are the

presence of acute infections of the uterus or tubes, for fear that pathogenic bacteria would be carried into the free peritoneal cavity; however, with proper selection of cases, careful asepsis, etc., I feel the chances are rather remote.

Due to the rather high price of lipiodol, an American made product, iodipin (which is a 40 per cent iodine solution in vegetable oil) has been put out by Merck; however, the prices which I have been able to receive are about the same as lipiodol.

### Case Reports

*Case No. 1.*—Mrs. E. M., age forty-five, one pregnancy, normal delivery eighteen years previously. Still menstruating but irregular at times. Came to me January 31, 1930, complaining of vaginitis. On examination was found to have gonorrheal cervicitis. After infection was cleared, uterogram was made May 30, 1930, which showed definite evidence of both tubes being patulous as shown in Fig. No. 1-A. Lipiodol in tubes as shown by arrows.

Fig. 2.

This case is one which escaped injuries of tubes by gonorrheal infection.

No. 1-B shows re-ray of Case No. 1 two days later, showing lipiodol in free peritoneal cavity.

*Case No. 2.*—Mrs. O. B. C., age thirty-two, normal menstrual history, one delivery twelve years ago, no subsequent pregnancies. By test for patency with air, both tubes found closed. Uterogram May 14, 1929. Injected lipiodol confirmed former test for patency as shown in Fig. No. 2. Laparotomy May 18, 1929. Both tubes were found infected, occluded and were removed.

*Case No. 3.*—Mrs. T. E. B., age thirty-seven, menstruation regular, married ten years, never pregnant. General health poor, no special pain or pathology found about uterus or tubes on bimanual examination. Uterogram June 28, 1930, which shows in Fig. No. 3-A to have the lipiodol in the left tube but none seen in free peritoneal cavity.

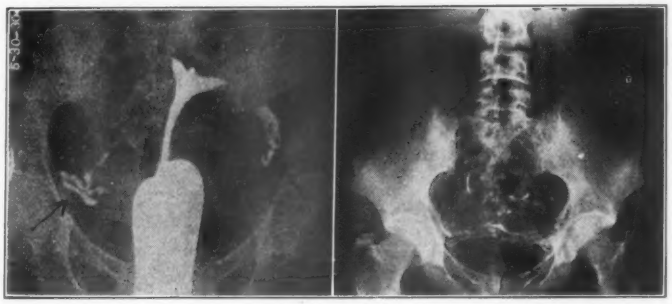

Fig. 1-A. Fig. 1-B.

Re-ray of Case No. 3 shown in 3-B, made about twenty-four hours after Fig. No. 3-A, shows evidence of media free in abdominal cavity as indicated. This probably met with a spasm of the tube at time of injection of the uterus or did not have sufficient pressure to force through. Tubes with mild occlusion might be opened by this method.

*Case No. 4.*—Mrs. V. J. G., age twenty-one, menstrual history normal; one labor in 1924, at which time she had no trouble, no abortions, no miscarriage. Came to ascertain why she did not become pregnant again. Uterogram made April 22, 1929, showed both tubes to be patulous as indicated in Fig. 4-A.

Fig. 4-B is same case as No. 4 taken a few minutes after Fig. No. 4-A, which shows lipiodol in the peritoneal cavity as indicated.

Case No. 4 re-rayed three hours after injection showing media well distributed in peri-

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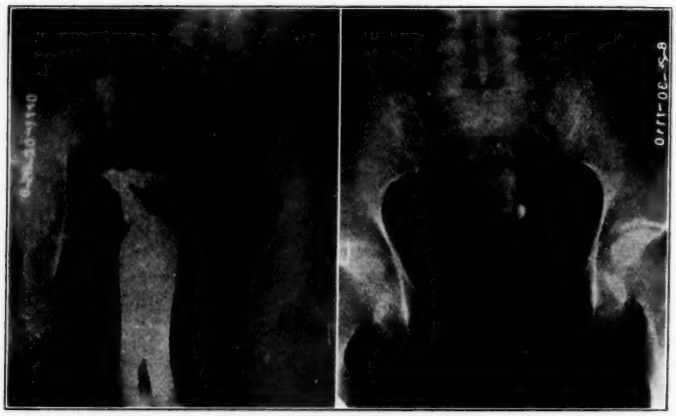

Fig. 3-A. Fig. 3-B.

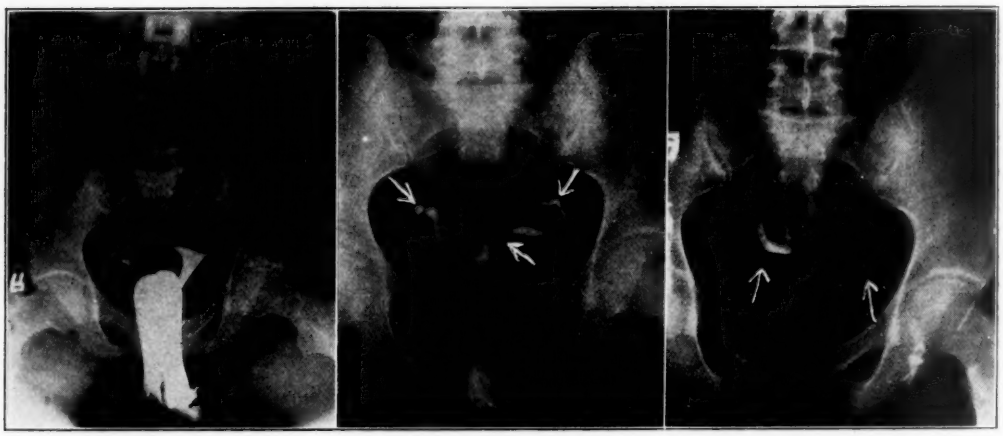

Fig. 4-A. Fig. 4-B. Fig. 4-C.

toneal cavity as indicated in Fig. No. 4-C, also some remaining in tubes.

### Conclusions

1. Uterograms made with lipiodol or iodized oil media are of great value in the study of the uterus and tubes in sterility cases.

2. In cases of pelvic pathology with question of pyosalpynx or hydrosalpynx, if causing mild occlusion, not only is this method of diagnostic value but of therapeutic aid.

3. To be able to study the tubes with X-ray is of benefit in the differential diagnosis between appendicitis and salpingitis on the right side.

4. Iodized oil injections in conjunction with pneumoperitoneum offers much in X-ray study of the uterus, tubes, ovaries and pelvic pathology.

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1. Sicard and Forestier: *Bull. de Soc. Méd. des Hop.*, Paris, 3-17-22.
2. Sergent and Cottentot: *Bull. de Soc. Méd. des Hop.*, Paris, 5-11-23.
3. Armand-Delille, G., Duhaenele and Marty: *La Presse Medicale*, May 14, 1924, No. 39, p. 421.
4. Ballou, David H.: *Canadian Medical Assn. Jour.*, 1925, Vol. XV, p. 995.
5. Newell, Quitman U.: *Am. Jour. Ob. and Gyn.*, Vol. XII, No. 2, August, 1926.
6. Stein and Arens: *Jour. Am. Med. Assn.*, Oct. 16, 1926, Vol. 87, p. 1299.

*Suite 804-6 Empire Building.*

# President's Message

**Maternal Mortality vs. Prenatal and Postnatal Care.**

(In Compliment to the Society's Committee on Maternal Welfare)

Our scientific activities must continue to grow, and it is a pleasure to record at this time the absolute proof of one of our scientific theories. It not infrequently happens that Medicine is charged with being an inexact Science and an imperfect Art, because experiments on a broad enough scale have not been conducted to verify our theories.

Typhoid fever, smallpox and diphtheria and probably some other infections in the last quarter-century have yielded to scientific control, and tuberculosis has been reduced to practically half its former toll, but our maternal death rate has not been lowered at all in the forty-six states that comprise the birth registration area in continental United States, having been 7.0 per one thousand live births in 1929, this being .5 higher than the rate for 1927, the last year for which the summary was published.

Today, our maternal death rate is known to be the highest in the civilized world, Denmark being the lowest, and apparently this disgraceful record of ours has been accepted supinely by the Medical profession, and only insignificant attempts to combat it and institute adequate maternity care have been undertaken.

Fortunately, however, the past month has brought us a report from The Maternity Center Association in New York City that heartens us to amplify and accentuate our methods, and instead of rationalizing over such a situation, to prepare to meet it face to face with more energetic professional activity.

This report, which has been confirmed by the writer in personal conversation with the assistant director, covers a period of observation long enough for a satisfactory test, and contains complete records of a large enough number of women who availed themselves of prenatal and postnatal care in the same locality, as compared with others in that particular locality, "the control group," to make its findings conclusive that the methods heretofore suggested, and now for the first time so systematically carried out, were effective in decreasing the maternity mortality rate over a long period of time.

The methods employed were not new, but were persistently enforced by doctors and nurses who had to overcome also the prejudices and objections of many foreigners to hospitals and physicians alike.

The important facts in this report presented for the first time, and really containing the elements of one of the first scientific investigations of this subject on a large scale, are as follows:

1. Time: Six years;
2. Place: A section of New York City;
3. Population: 152,947;
4. Cases cared for: 4,728;
5. Results in maternal mortality in above group: 2.2 per 1,000 live births;
6. Results in mortality through same period among mothers not cared for, but living in the same section, "the control group": 6.2 (about the same as our National maternity mortality rate, but nearly three times as great as the "supervised" patients);
7. Methods employed: Continuous and adequate prenatal and postnatal care by competent doctors and nurses;
8. Locations: Private homes and maternity hospitals; and
9. Implications: That infant mortality can be radically reduced, and that relatively "30,000 babies that die each year before they are one month old, could live, and that 10,000 of the 10,500 women who die annually, might be saved," if all mothers knew what constitutes "adequate" care.

This maternity association report is as remarkable as it is convincing, and challenges us to attempt to duplicate these methods in our own practice.

As for the methods employed to gain these results, there was nothing new, and it is only the evidence presented by the record as a whole that is new. The results show also that the methods long advised were correct in theory, and thus another outstanding experiment, carried on with a living community as the laboratory, has been successful in demonstrating that another great and disastrous phase of disease can be decreased in its ravages.

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The vital points in the work were:

a. Expectant mothers were urged to seek medical and nursing care as early as possible, and the benefits increased directly with the length of time the women were under observation;

b. Women were aided in making these arrangements before the confinement, at the time of, and for six weeks subsequently by the district nurses, who taught the mothers what to eat, what to wear, and how to live hygienically; and

c. Each patient was urged to register as early as possible with a competent physician, or hospital, and, after registration, was sympathetically guided by the nurse, who reported on each patient at regular intervals.

These general methods can be employed in a measure anywhere, but to produce conclusive results, must be carried out systematically, and as a further necessary requisite, there should be created a genuine, personal interest in the patient, as well as the creation of an informed public opinion that will demand adequate maternity care.

All true education is directed self-education, and this report again positively confirms an old scientific theory.

J. Allison Hodges, M. D.,
*President, Medical Society of Virginia.*

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Next Issue: The County Medical Society: *The Business of Medicine* vs. *The Art of Medicine*. (In compliment to Department of Clinical Education).

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# Miscellaneous

**Astonishing Relativity.**

Relativity is a magic word. Einstein made it so. Long before that celebrated genius was born, however, men found it impressive to measure problems and conditions in relation to other things. This sort of relativity a canny observer in the field of public health has used to express in a rather amazing light the magnitude of the syphilis problem in the United States.

Since 1920, this observer points out, there have been reported in the United States 35,000 more cases of syphilis than of scarlet fever; 79,000 more than of all forms of tuberculosis; 500,000 more than of diphtheria. There were three times as much syphilis as smallpox and five times as much syphilis as typhoid fever reported during the same period.

The figures for Illinois, which go back through 1923 only, are somewhat different in relativity from those enumerated above for the United States. Over this period of seven years the 83,515 cases of syphilis reported in Illinois gave a figure over eight times greater than that of typhoid fever prevalence, 10,149 cases. The reported cases of syphilis were 71,000 greater than of smallpox; 34,910 greater than of diphtheria; 12,624 greater than of whooping cough.

There were about 9,000 more cases of scarlet fever and about 18,000 more cases of tuberculosis than of syphilis reported in Illinois.

In appraising the public attitude towards the control of these diseases, Dr. John H. Stokes remarks that a typhoid carrier can all but be imprisoned for life but how rarely a syphilis carrier!

Stokes observes, further, that both by direct and indirect reasoning it appears, as a result of observations made during the past decade, that syphilis is controllable by treatment of infected persons. He is optimistic enough to look forward, in view of the decline in syphilis since 1918, to the extinction of this disease, provided present control and preventive methods continue in sufficient application. (*Ill. Health Messenger*, September 1, 1930.)

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# Book Announcements

**Abdomino-Pelvic Diagnosis In Women.** By ARTHUR JOHN WALSCHEIL, M. D., Director of Obstetrical and Gynecological Department of Broad Street Hospital; Director of Obstetrical and Gynecological Department of Pan-American Medical Center and Clinics, New York City; Consultant in Gynecology and Obstetrics to Margaret Hague Maternity Hospital, Jersey City, N. J., etc. St. Louis. The C. V. Mosby Company, 1931. Octavo of 1,000 pages. With three hundred ninety-seven illustrations, one color plate. Cloth. Price, $12.50.

**Clinical Allergy Particularly Asthma and Hay Fever.** Mechanism and Treatment. By FRANCIS M. RACKEMANN, M. D., Physician to the Massachusetts General Hospital, Instructor in Medicine, Harvard Medical School, Boston, Mass. New York. The Macmillan Company. 1931. Octavo of 617 pages. Cloth. Price, $10.50.

**Certified Milk Conferences Held in 1930.** Annual Conference American Association of Medical Milk Commissions, Inc., and Certified Milk Producers' Association of America, Inc. Detroit, Michigan, June 23-24, 1930. Annual Conference Metropolitan Certified Milk Producers' Inc., with the Certified Milk Prdoucers' Association of America, Inc. New York, N. Y., February 3, 1930. Constitution and By-Laws of the American Association of Medical Milk Commissions, Inc., Constitution and By-Laws of the Certified Milk Producers' Association of America, Inc., Methods and Standards for the Production of Certified Milk. Octavo of 354 pages.

# Department of Clinical Education

## OF THE MEDICAL SOCIETY OF VIRGINIA

**Cooperation.**

The following letter was sent out in January to the Councilors:

"I am calling on the Councilors to get in touch with the officers of the various component societies in your Districts and arrange for as many clinical meetings as possible. We should be able to hold at least two meetings with clinics in each District during the year. With your cooperation and assistance this can be done.

"Please notify our Secretary, Mr. G. W. Eutsler, and the chairman of this department, of the dates of proposed meetings. Also, let us know if we may assist you in working up the meetings or in securing Clinicians to take part in the programs.

"The Department of Clinical Education Advisory Board, the Medical Department of the University of Virginia and the Medical College of Virginia are cooperating and anxious to make all of our clinical meetings attractive and stimulating."

Our purpose in sending out these letters is to assure ourselves of the hearty cooperation and interest of the Councilors, in the continued education of the practitioners of the state, and to further transmit this enthusiasm and interest in the work, to the officers of the various component societies, and through them to the individual members, and by this means to bring the physicians of the state, as a body, to realize the importance of giving better service, which can only be done by keeping abreast of the times, and improving our methods of treatment in every way possible. The success of a clinical meeting is not of necessity dependent on the numbers who attend, nor the prominence of those appearing on the program. The spirit of cooperation and interchange of ideas at these gatherings stimulates interest, research, and study. We should not be discouraged by small crowds nor the apparent lack of enthusiasm on the part of some of our associates.

It is part of this campaign to enlist the interest of men who have gotten out of the habit of attending medical meetings and are neglecting to do any post-graduate work. These are not, by any means, confined entirely to the country districts—a perusal of the list of those who attend our state society meetings will show that only a small proportion of doctors in the cities and larger towns attend these, or any other medical meetings. It is also true that our clinical meetings will have a small number in attendance as long as the component societies fail to meet regularly, or neglect to have stimulating and attractive programs.

"The case for life-long education, systematic, and purposeful, rests upon the evident desirability of what Jastrow has called 'the continued stimulation of the mature mind.' That keen-edged tool, the intellect, is kept bright by use, dulled by disuse; rusting out, not wearing out, is what threatens it. Intelligence, according to Meiklejohn, is not 'a thing you can have, can get and keep and give; it is a thing you must do; it is activity; it is a function of the human spirit.'"*

Those of us who are interested in the work of this Department should read with pleasure Dr. E. G. Williams' very instructive and comprehensive paper "Evolving a Health Department." We should take great pride in the tremendous progress and notable accomplishments of our State Health Department under the direction and leadership of Dr. Williams.

It is needless at this time to try to enumerate the numberless discoveries and advancements made in preventive medicine and sanitation during the past few years. This campaign for better training and continued education of physicians is closely related to and associated with preventive medicine and health measures. The practitioner is as much interested in preventing as in the treatment of disease. The health authorities and their associates are special workers in preventing disease through sanitation and other accepted methods.

There should be no conflict, but hearty cooperation between those engaged in these various departments of medicine. We might with profit at a later date have some interesting discussions by leading health workers and outstanding clinicians, dealing with the important question, of coordinating clinical meetings, held for the purpose of educating and training practitioners, and diagnostic health clinics, conducted by specialists for the benefit of those unable to employ a physician.

I. C. HARRISON, *Chairman.*

SCHEDULED MEETINGS

The Norfolk County Medical Society announces the following programs for February, the meetings

*University of Virginia NEWS LETTER—January 15, 1931.

to be held at their headquarters in Medical Arts Building, Norfolk, Va. Members of the Medical Society of Virginia are invited to attend any or all of these meetings:

*Monday, February 9, 1931.* SURGICAL SECTION.—Surgical Treatment of Cancer of the Breast, Dr. B. A. Doggett.
Treatment of Cancer of the Breast with Radium, Dr. E. C. S. Taliaferro.
*Monday, February 16, 1931.* SECTION ON MEDICINE—An Unappreciated Source of Epigastric Distress, Dr. Jas. W. Hunter.
Streptococcus Viridans in Endocarditis, Dr. Arthur D. Parker.
*Thursday, February 19, 1931.* SECTION ON EYE, EAR, NOSE AND THROAT—Anatomy and Physiology of the Static and Kinetic Labyrinth, Dr. Jos. S. Hume.
*Monday, February 23, 1931.* SECTION ON OBSTETRICS—Treatment of Placenta Praevia, Dr. Geo. T. Myers.

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The Post-Graduate Medical Society of Southern Virginia will hold its regular meeting at Waverly, April 14, 1931. A symposium on Obstetrics will be held in cooperation with the Department of Clinical Education of the State Society.

Dr. Frank N. Mallory, Lawrenceville, is president, and Dr. Philip Jacobson, Petersburg, secretary of the Society.

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# Proceedings of Societies

### The Piedmont Medical Society

Met at the University of Virginia on December 4th, with a registered attendance of twenty-one. The program consisted of a clinico-pathological conference at which four cases were presented. These were discussed by the members of the visiting staff of the University of Virginia Hospital, in the departments of Surgery, Pediatrics, and Medicine.

After the business meeting supper was served at the Farmington Country Club.

Dr. J. N. Clore, Madison, is president and Dr. W. E. Bray, University, secretary-treasurer, of this society, which is composed of the counties of Albemarle, Buckingham, Culpeper, Fluvanna, Greene, Louisa, Madison, Nelson, Orange and Spotsylvania.

### The Albemarle County Medical Society

Held its regular monthly meeting, January 8th, with the president, Dr. D. C. Smith, presiding. Dr. Alfred Chanutin addressed the Society on the subject of Vitamins, and Dr. Robert L. King reported a case of Addison's Disease in a Negro.

Several new members were admitted to the Society and the following officers were elected for the ensuing year: President, Dr. F. C. McCue, Charlottesville; vice-president, Dr. V. W. Archer, University; and secretary-treasurer, Dr. A. D. Hart (re-elected), University.

### Accomack County Medical Society.

The annual banquet and ladies' night of this society was held December 9, 1930, in conjunction with the Physicians' Journal Club, with Dr. W. W. Kerns, retiring president acting as toastmaster at the banquet. Interesting talks were given by Drs. John R. Hamilton, Harry Denoon, J. L. DeCormis, James E. Doughty, J. H Hiden, and S. S. Kellam.

The following officers were elected for the ensuing year: President, Dr. J. H. Hiden, Pungoteague; vice-president, Dr. James Doughty, Onancock, and secretary-treasurer, Dr. John W. Robertson (re-elected) Onancock.

### The Physicians' Journal Club of the Eastern Shore of Virginia

Held its regular monthly meeting at the Northampton-Accomack Memorial Hospital, on January 13th, with an attendance of twenty-four physicians. The president, Dr. John W. Roberston, presided. Papers were presented by Drs. Frank Johns and Beverley Tucker, both of Richmond. The Journal Club is composed of all doctors in Accomack and Northampton Counties.

### The Post-Graduate Medical Society of Southern Virginia,

Composed of the counties of Nottoway, Dinwiddie, Prince George, Greenesville, Brunswick, Surry, and Sussex, held its regular meeting at City Point Inn, Hopewell, Va., on the evening of January 13th, under the presidency of Dr. Joel Crawford, Yale. The Department of Clinical Education of the State Society cooperated in the holding of this meeting. There were about 100 in attendance During the dinner which opened the meeting, Dr. Manfred Call, Richmond, reported on the activities of the Department of Clinical Education for the past year. The feature of the meeting was a symposium on "Allergy." Those presenting papers were Dr. Oscar Swineford and Mr. Edward Hawke, of the University of Virginia: Dr. Warren T. Vaughan, Richmond; Dr. Edward L. Alexander, Newport News; Drs. Meade Edmunds and C. S. Dodd, Petersburg. Dr. J. A. Hodges, President of the State Society, also gave a talk.

At the election of officers which followed, Dr. Frank N. Mallory, Lawrenceville, was elected president; Drs. W. W. Seward, Surry,

and W. D. Prince, Stony Creek, vice-presidents; Dr. Philip Jacobson, Petersburg, secretary-treasurer; and Dr. Wright Clarkson, Petersburg, chairman of the steering committee. Both of the latter were re-elected.

Dr. J. M. Bailey, Hopewell, was elected delegate, and Dr. W. M. Phipps, also of Hopewell, alternate-delegate to represent Prince George County in the House of Delegates at the next meeting of the State Society.

The next meeting of this Society will be held at Waverly, on April 14th.

# Woman's Auxiliary, to the Medical Society of Va.

**Reports From Auxiliary to Southern Medical Association.**

The Woman's Auxiliary to the Southern Medical Association has Medical History as its project. This Auxiliary is affiliated with the Auxiliary to the American Medical Association, in the same manner as the Southern Medical Association is affiliated with the American Medical Association.

The Auxiliary to the Southern Medical Association met at the Brown Hotel, Louisville, Ky., November 11th to 13th, with the President, Mrs. James Newton Brawner, Atlanta, Ga., presiding. The attendance was large and much interest shown.

After the invocation, there were addresses of welcome from the President of Louisville Auxiliary, Mrs. John K. Freemen, and President of Kentucky State Auxiliary, Mrs. E. B. Houston. Response was made by Mrs. Milton S. Lewis, Nashville, Tenn.

Dr. Hugh S. Cumming, President Southern Medical Association, brought greetings, and was much pleased with the work and growth of the Auxiliary.

There was an address by Dr. E. H. Cary, who, because he brought to the American Medical Association the resolution for an Auxiliary, is affectionately called "The Father of the Auxiliary." He talked on the "Importance of Self-Education."

Introduction of Honor Guests; Mrs. Hugh S. Cumming, Washington, D. C., Mrs. J. Newton Hunsberger, Philadelphia, Pa., President, Auxiliary to the American Medical Association, and four members of the National Board; Mrs. S. C. Red, Historian, Mrs. Walter J. Freeman, Convention Chairman, Mrs. R. N. Herbert, *Hygeia* Chairman, Mrs. Southgate Leigh, Organization Chairman.

Mrs. Hunsberger talked along self-education and health lines. She said a "Doctor's wife is usually a very progressive club woman and, if she would devote her time to cultural, social, and civic questions, as well as making a study of medical affairs, she would be better prepared to carry the true story of medicine to the public."

Mrs. S. C. Red, Mother and First President of the National Auxiliary, first woman to write the Medical History of a state, told of writing the "Pioneer Doctor," just off the press, the proceeds from which will be devoted to Auxiliary work.

Mrs. Walter Freeman gave tentative plans for the American Medical Association Convention in Philadelphia. Even at this early date arrangements are made for a wonderful meeting.

Mrs. Herbert's "Educate with *Hygeia*" was a splendid outline for the coming year.

Mrs. Edward Clay Mitchell spoke on the "Dangers of State Medicine."

The report of "Jane Todd Crawford Memorial" was most interesting. A fund has been started by the women of Kentucky. What form the Memorial will take is to be determined by a committee of women from widespread areas. The Auxiliary to the Southern Medical Association voted to contribute fifty dollars to this fund, and recommended that each state be encouraged to establish such a fund.

The theme of this year's work is to be "Romance of Early Medicine." An effort will be made to secure the early history of outstanding Medical Heroes of each state.

The "Spring Lance," used by Dr. Ephriam McDowell (1809), was exhibited; also an old diploma (1780). There were read several histories of Medical Heroes.

Dr. Gordon Bates, Toronto, Can., Secretary General of the Canadian Social Hygiene Council, was a speaker at a luncheon of nearly three hundred guests. The program outlined "As Hygiene affects human relationships in home, community, state and nation." Dr. Bates defined Social Hygiene as "the study of all those things which concern the welfare of individuals, living in society, to the end that health

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may be improved from generation to generation." He recommended annual X-ray of teeth and annual physical examinations. The speaker disapproved group teaching of sex to children. He suggested future education for parenthood, and to live up to the high standards which women have set in the past.

Following the meeting of the Auxiliary, the President, Mrs. S. A. Collom, and the retiring President, Mrs. Brawner, were invited to speak over the radio. At this time they gave to the world a few words of the manner in which the Auxiliary is assisting the Medical Profession.

On "McDowell Day," the Auxiliary members took part in a pilgrimage from Louisville to Frankfort and Danville. A statue of Dr. McDowell was unveiled at Frankfort. The sponsors were President, Kentucky State Medical Association, President, Southern Medical Association, President, Woman's Auxiliary to Kentucky State Medical Association, President, Woman's Auxiliary to Southern Medical Association. There was an address by Dr. George A. Hendon, "Ephriam McDowell—The Natural Product of His Labors."

An address on "Jane Todd Crawford—the Model Patient," was given by Mrs. P. E. Blackerby, President of the State Auxiliary.

The statue was presented by Dr. Arthur T. McCormack, for the State Medical Association, and accepted by the Governor of State, Hon. Flem D. Sampson.

The Danville program consisted of a visit to the home of Dr. McDowell, then to the public park where he is buried, to place a wreath on his grave. The Memoral address, "Ephriam McDowell—the Pioneer and Physician," was given by Dr. William Gerry Morgan, Washington, D. C., President of the American Medical Association.

The Social Entertainments were numerous and beautiful, starting with Mrs. Irvin Abell's luncheon to the Executive Board; then a reception and tea at the Woman's Club, honoring Mrs. Hugh S. Cumming, Mrs. J. N. Hunsberger, Mrs. J. N. Brawner, and the other honor guests. The evening reception and ball honored Dr. and Mrs. Cumming. The Louisville Auxiliary gave a lovely dinner and musical at the Pendennis Club for all the ladies.

Mrs. Geo. Hendon, General Chairman of the Ladies' Committee, entertained the past Executive Board at breakfast, and then an automobile ride for all the ladies to see "My Old Kentucky Home."

Respectfully submitted,

MRS. SOUTHGATE LEIGH,
*Delegate.*

# The Truth About Medicine

In addition to the articles enumerated in our letter of November 29, the following have been accepted:

Cutter Laboratory.
- Oak Pollen Extract—Cutter; Western Ragweed Pollen Extract—Cutter; Western Water Hemp Pollen Extract—Cutter.

Gane & Ingram, Inc.
- Ephedrine Hydrochloride.
- Ephedrine Sulphate.

Lederle Laboratories, Inc.
- Diphtheria Toxoid, ten immunization treatment packages.
- Diphtheria Toxoid, fifteen immunization treatment packages.
- Tetanus-Gas Gangrene Antitoxin (Lederle).
- Gas Gangrene Antitoxin (Polyvalent) Refined and Concentrated without Tetanus Antitoxin (Lederle).

Mead Johnson & Co.
- Mead's 10 D Cod-Liver Oil with Viosterol.

National Drug Co.
- Diphtheria Toxin-Antitoxin Mixture (Diphtheria Prophylactic) one hundred and fifty 1 c.c. vial packages.
- Diphtheria Toxoid, five (three dose) immunization treatment packages.
- Diphtheria Toxoid, fifty (three dose) immunization treatment packages.
- Diphtheria Toxoid, one (two dose) immunization treatment packages.
- Diphtheria Toxoid, five (two dose) immunization treatment packages.
- Diphtheria Toxoid, ten (two dose) immunization treatment packages.
- Diphtheria Toxoid, fifteen (two dose) immunization treatment packages.
- Diphtheria Toxoid, fifty (two dose) immunization treatment packages.
- Schick Test.
- Schick Test Control.
- Tuberculin Old (Human)

Parke, Davis & Co.
- Parke, Davis & Co.'s Viosterol in Oil 250 D.
- Parke-Davis Cod-Liver Oil with Viosterol 10 D.

Winthrop Chemical Co., Inc.
- Winthrop Viosterol in Oil 250 D.

## NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Antipneumococcic Serum, Type 1.—An antipneumococcus serum (New and Nonofficial Remedies, 1930, p. 351) marketed in packages of one 50 c.c. double-ended vial with apparatus for intravenous injection. The National Drug Co., Philadelphia.

Erysipelas Antistreptococcus Serum.—A specific serum containing the antibodies and antibacterial properties of *Streptococcus* erysipelatis. For therapeutic use against erysipelas it may be of value when administered in adequate doses in the early stages of the disease. Though there is no evidence for the

value of nonspecific antistreptococcus serums, there appears to be some evidence for the value of a serum representing the antigenic and antibacterial properties of *Streptococcus* erysipelatis.

Erysipelas Antistreptococcic Serum—Lilly (Concentrated Globulin).—The serum is obtained from horses immunized with strains of hemolytic streptococci obtained from human cases of erysipelas. It is marketed in packages of one syringe containing an average initial therapeutic dose. Eli Lilly & Co., Indianapolis.

Richards Psyllium Seed.—A brand of psyllium seed—N. N. R. (New and Nonofficial Remedies, 1930, p. 311). Richards Pharmacal Co., Inc., New York.

Ointment Scarlet Red Biebrich 8 Per Cent.—An ointment composed of scarlet R medicinal Biebrich —N. N. R. (New and Nonofficial Remedies, 1930, p. 148) 8 per cent in a base consisting of stearin, wool fat and petrolatum. The National Drug Co, Philadelphia.

Typhoid—Paratyphoid A Vaccine.—This product (new and Nonofficial Remedies, 1930, p. 373) is also marketed in packages of three 1 c.c. vials. The National Drug Co., Philadelphia (Jour. A. M. A., December 6, 1930, p. 1745).

Antirabic Vaccine, Semple Method.—An antirabic vaccine (New and Nonofficial Remedies, 1930, p. 352) prepared according to the general method of David Semple (phenol killed). It is marketed in packages of fourteen vials, each containing 2 c.c ; in packages of fourteen vials, each containing 2 c.c. and a syringe; in packages of fourteen syringes, each containing 2 c.c. Medical Arts Laboratory, Inc., Oklahoma City, Oklahoma.

Diphtheria Toxoid—Squibb.—This product (New and Nonofficial Remedies, 1930, p. 364) is also marketed in packages of twenty 1 c.c. ampules of diphtheria toxoid and two 1 c.c. ampules of diluted diphtheria toxoid for the reaction test. E. R. Squibb & Sons, New York.

Normal Horse Serum.—This product (New and Nonofficial Remedies, 1930, p 340) is also marketed in packages of one 50 c.c. vial. E. R. Squibb & Sons, New York.

Sodium Gold Thiosulphate.—Sodii et Aurii Thiosulphas.—Gold Sodium Thiosulphate.—The complex salt formed from one molecule of gold thiosulphate and three molecules of sodium thiosulphate, containing approximately 37.4 per cent of gold. The use of sodium and gold thiosulphate in the treatment of lupus erythematosus is considered a distinct advance in the therapy of this condition. The beneficial and often curative action of the drug in a good percentage of cases seems to warrant giving it a definite place in the treatment of a disease for which at present there is no specific remedy. The drug must be used with extreme caution. Dosages at first advocated have been found too great, resulting frequently in severe and even fatal reactions. Even with smaller doses, accidents have occurred.

Gold Sodium Thiosulphate—Abbott.—A brand of sodium gold thiosulphate—N. N. R. It is supplied in ampules containing respectively 0.05 Gm., 0.1. Gm., 0.25 Gm., and 0.5 Gm. Abbott Laboratories, North Chicago, Ill.

Diphtheria Toxin-Antitoxin Mixture (Diphtheria Prophylactic).—This product (New and Nonofficial Remedies, 1930, p. 356) is also marketed in packages of one hundred and fifty 1 c.c. vials, fifty immunizations. The National Drug Co., Philadelphia.

Diphtheria Toxoid —This product (New and Nonofficial Remedies, 1930, p. 365) is also marketed in packages of five immunization treatments, in packages of fifty immunization treatments. For the two dose method of treatment the following forms are marketed: packages of one immunization treatment; packages of five immunization treatments; packages of ten immunization treatments; consisting of one vial; packages of fifteen immunization treatments, consisting of one vial; packages of fifteen immunization treatments, consisting of thirty vials, in packages of fifty immunization treatments, consisting of one hundred vials. The National Drug Co., Philadelphia.

Pollen Allergen Solutions—Squibb.—The following pollen allergen solutions—Squibb (New and Nonofficial Remedies, 1930, p. 27) are marketed in treatment set packages of three 3 c.c. vials: Ragweed Combined Pollen Allergen Solution—Squibb; Timothy Pollen Allergen Solution—Squibb. E. R. Squibb & Sons, New York. (Jour. A. M. A., December 20, 1930, p. 1913 )

## PROPAGANDA FOR REFORM

Roentgen Diagnosis of Synovial Adhesions.—Another chemical adjunct to roentgen diagnosis seems to be available. With this new aid, altered permeability of synovial membranes can be determined and accurate pictures secured of synovial adhesions. This substance is a disodium salt of tetraiodo-orthosulphobenzoic acid. The substance is reported to be relatively nontoxic and to be well borne when injected. (*Jour. A. M. A.*, December 6, 1930, p. 1749.)

The Prophylaxis of Cocaine and Allied Intoxicants.—A study to determine the efficiency of barbital compounds in the detoxication of local anesthetics has been made. The minimal tolerated and minimal lethal doses of cocaine, procaine and butyn for rabbits were determined without protection and after the administration of various depressants. The depressants found effective and in the order of their efficacy were urethane (ethyl carbamate), chloral hydrate, paraldehyde, barbital, phenobarbital, and isoamylethylbarbituric acid, the last named being the most effective. The investigators find that there are two types of intoxication into which clinical cases may be dividied. One has a prolonged course and death results from primary respiratory failure; the other has a short course and death results from primary cardiac failure. The first type is reproduced experimentally by subcutaneous injection of cocaine, the second type by intravenous injection. Against this second type of intoxication the depressants are valueless. (*Jour. A. M. A.*, December 13, 1930, p. 1839.)

Three Hundred Years of the Cinchonas In Medicine.—The exact date of the introduction of the use of cinchona bark into medicine is somewhat uncertain. Its introduction into medicine dates from about 1630; in 1630 Juan Lopez Canizares was the first to demonstrate the use of the bark of the cinchona tree in the treatment of malaria. Quinine itself was isolated more than a century ago by Caventon and Pelletier. Quinine is commonly described as a protoplasmic poison and it is alleged to produce its effects in the body because of this property; the action being strongest on undifferentiated protoplasm. The comparative safety in the use of the drug is indicated by the fact that fatalities from its use have been exceedingly few. The excelling virtues of the alkaloid in modern medicine remains in its selective toxicity to undifferentiated protoplasm, notably to the plasmodia of malaria. Quinine is part of the "standard" treatment of malaria. Osler said many years ago that the physician who at this day cannot treat malarial fever successfully with quinine should abandon the practice of medicine. (Jour. A. M. A., November 1, 1930, p. 1350.)

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# Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 104½ West Grace Street, Richmond, Va.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 57. FEBRUARY No. 11


# Editorial

## Cancer of the Prostate.

The *Annals of Surgery* for January contains a monumental tribute to Dr. James Ewing in the form of some fifty odd contributions to the study of cancer. Among many notable articles, there is one by Barringer on carcinoma of the prostate, "the most baffling of urological conditions." His thoughtful observations deserve a wide audience. None is more important than his reiteration of an old story, namely, that the rarity of early diagnosis is the chief obstacle to a more rapid betterment of end-results.

The chance for a higher percentage of early diagnoses rests fundamentally with the family physician. But the average physician does not see many of these cases, nor does he have the opportunity to study them intensively in the wards, operating room, and at autopsy. The moment may be used, therefore, with appropriateness, and possibly with advantage, to summarize the important pathological and clinical features of this dread disease.

Carcinoma of the prostate is the most frequent form of malignancy in the genito-urinary tract. Young[1] estimates that four men of every hundred living to sixty will develop prostatic cancer. Compilations from many centers uniformly reveal that 15 to 20 per cent of all patients with prostatic obstruction have cancer, alone or in association with benign hypertrophy.

It is doubtful if this rate of incidence is appreciated by the profession at large—certainly a minority of patients found to have prostatic cancer at urological clinics have been referred with such diagnosis. And rarely do the cases diagnosed prior to admission have other than advanced lesions. The explanation of this is simple. First, cancer of the prostate is a stealthy and silent invader for many months. Second, rectal palpation is one of the least used examinations in medical practice.

Study of the results obtained in the treatment of prostatic carcinoma affords gloomy reading. The outlook for men so afflicted will never be bright. Yet any judicial review of the pertinent literature of the past ten years will give encouragement that better results can be secured. The fulfillment of this hope depends, above everything else, upon prompter recognition of the condition and only secondarily upon improvements in therapeutic methods.

The malignant change begins insidiously in the hypertrophied or non-hypertrophied gland, occasionally between the ages of forty and fifty, much more frequently in the later decades of life. The posterior lobe seems peculiarly prone to be the site of the primary growth but origin may occur in any part of the gland. The rate of local spread is normally slow. The whole prostate may become infiltrated no matter what the point of origin. Ultimately the capsule is penetrated with consequent invasion of adjacent tissues, even to the extent of a complete encircling of the rectum by a solid mass of carcinomatous tissue. The customary first line of extension from the posterior lobe is toward, and into, the seminal vesicles and into the loose tissue between the base of the bladder and prostate. Involvement of the urethral and bladder mucosa is, as a rule, a late phenomenon.

The prostate is rich in lymphatics draining to the retroperitoneal glands of the pelvis but not tributary to the inguinal nodes. Early involvement of the regional pelvic glands is probably very much more frequent than has been thought. Autopsy reports on patients with early prostatic cancer are not abundant. Dossot's[2] experience is informative. He reports five cases coming to prostatectomy with a diagnosis of benign hypertrophy but proving to have carcinoma and dying after operation. At autopsy four of the five showed involvement of the pelvic glands; the postmortem protocol of the fifth case carried no statement

[1] Young, H. H., Practice of Urology, 1926.

[2] Dossot, Raymond, Cancer of Prostate, Jour. Urol., XXIII, p. 217.

about the glands. If the findings in this series are typical, early glandular spread is the rule rather than the exception. The probability for the late cases is obvious. It is unfortunate that the pelvic glands are inaccessible to palpation. Massive enlargement is required to permit palpation through the abdominal wall or even through the rectum.

From the pelvic nodes there may be extension by continuity to the higher lymphatic chains. In an occasional case, a signal gland above the clavicle or in the axilla is the first clue to an amazing adenopathy. Statistical tabulations record rather frequent involvement of the inguinal nodes. This must occur late and, in all likelihood, be an evidence of retrograde permeation, seen only after thorough invasion of the pelvic nodes.

A notable feature of cancer of the prostate is the high incidence of skeletal metastases. Bumpus[3] states that such changes are demonstrable by X-ray in one-third of the cases. The pelvic girdle, the vertebrae and the femurs are the most frequent sites, in the order given, but not even the skull escapes. The resulting changes are usually osteoplastic, sometimes osteoclastic, both types may be seen in the same individual. These metastases now and then cause pathological fractures, more often are responsible for pain conforming to their location. On the other hand, it is surprising how extensive the dissemination to bones may be without any symptoms. Metastases occur to such structures as the liver, lung, brain, and spinal cord but much less frequently than to bone.

Many observers have directed attention to the paradox that the degree of prostatic change is no gauge of the extent of accompanying metastases, to bone or elsewhere. Widespread dissemination can be found when the growth in the prostate seems relatively insignificant. Conversely, bony metastases may be absent in the presence of a large nodular prostate which has obviously invaded adjacent structures.

The virulence of prostatic cancer and the rapidity of its spread show the same extreme variations as are true for carcinoma primary in other organs. Some index to the average course is afforded by the duration of life in untreated cases, counting from the onset of the first symptoms to death. In the series of Bumpus this period was three and one-half years. The actual duration was, of course, longer, there being no way to know the interval between the start of malignancy and the initial resultant symptom.

The majority of patients with cancer of the prostate have an associated benign hypertrophy. Sooner or later interference with bladder drainage develops, this followed in due time by the familiar train of changes in the upper urinary tract inevitable with obstruction at the vesical neck, no matter what the type. The cancerous infiltration alone may cause obstruction. When it is solely responsible, the growth is usually far advanced in its life history. In a small but appreciable group of cases the prostate never becomes obstructive, death, if attributable to the cancer, being incident to the cachexia and other damage of widespread metastases.

The facts recounted above suggest the varying clinical histories these patients give. For the largest number, the symptoms do not differ from those of a benign hypertrophy,—increasing difficulty and frequency of micturition, retention, a final toxemia from infection and renal back-pressure. For another group the predominant complaint is pain secondary to pressure upon nerves or nerve roots. The usual reference is naturally in the distribution of the sacral plexus but will correspond to the location of such metastases. These patients, too, frequently have symptoms of urethral obstruction in greater or less degree. The first manifestations for a small but definite group are evidences of a remote dissemination, such as pathological fractures, profound anemia, signs of spinal cord pressure and other pictures according to the organ involved. It should be said in passing that hematuria is in no wise pathognomonic of prostatic cancer.

The most important and most valuable diagnostic method for carcinoma of the prostate is careful rectal examination. The average case, as met in a urological clinic, is promptly diagnosed at the first palpation. One finds a hard, nodular gland with extension toward or into the seminal vesicles. The gland feels fixed, even "frozen" or "cemented" in place, if there is much peri-prostatic infiltration. There may already be a compression narrowing of the rectal lumen. Now and again the characteristic feel is obscured by a superimposed oedema and will be fully revealed only after subsidence of der drainage. In other cases the gland is rel-

[3]Bumpus, H. C., Carcinoma of Prostate, Surg. Gyn. & Obstet., 1921, XXXII, 31.

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the latter, following a period of adequate bladatively small but presents the typical stony hardness, nodules and irregularity. But in a few cases, the prostate will maintain normal contour and feel so soft that a diagnosis will unhesitatingly be made of simple hypertrophy. All these are findings in advanced cases, one-third of whom will have demonstrable bony metastases and no doubt regional lymph gland involvement of much higher frequency.

The earlier the lesion, the more difficult is the diagnosis. In the man over fifty, any induration of the prostate, any asymmetry, any hard nodule should excite suspicion and call for the most searching examination, no matter if other evidence of prostatic disease is entirely lacking. Fortunately the posterior lobe is the portion of the prostate most accessible to palpation and it is here that the cancer seems to begin more often than elsewhere. The early cancerous change in preexisting hypertrophy of middle or lateral lobes will rarely be recognized until after prostatectomy. There is no doubt truth in the belief that early prostatectomy for benign hypertrophy serves in some measure as a cancer preventive.

This is not the place to discuss the treatment of prostatic cancer. The statement that whatever one does for cancer of the prostate is wrong, is often quoted and has grim import. From what has already been said it is evident that the opportunities for cure are going to be rare when diagnoses are easily made. The aim then can usually be no more than prolongation of life and reduction of suffering. Most patients present multiple needs: the protection of the kidneys against back-pressure, the relief of pain and the halting or delay of the carcinomatous spread. Prostatectomy, punch procedures, permanent cystostomies, radium and X-ray,—all have their place in securing these ends. Judgment as to which of them or what combination of them is indicated for a given case must of necessity rest with the men especially trained in this work. There is often sincere disagreement among them as to what should be done; certainly standardization is far off. But a great deal of promising work is going forward, notably in the way of clarifying our understanding of the cancer process and in the refinement and use of radiotherapy. As Barringer says, we are only at the threshold of knowledge, both as to the cause and control of prostatic cancer.

The treatment of prostatic cancer will remain basically one of limited palliation as long as the cases are seen late. When many months intervene between the first symptoms and the initial examination—in one series reviewed this period had averaged two years—nothing more is possible. The real chance for improved results hinges upon earlier diagnoses. If these are to be made, every man over fifty with obstructive symptoms or neuralgic pains in the back, pelvis or extremities must receive careful and repeated rectal examinations. Truly much education of the public will have to be done to secure this opportunity for the physician. And looking further, sight must not be lost of that utterly silent phase of prostatic cancer. Discovery then is only possible when investigation of the prostate is a routine part of every physical examination for the man in or past middle age. It will be a utopian era when any appreciable portion of the adult male population demand such overhauling annually and physicians have trained themselves to make the most of it.

In the incessant combat with cancer the family physician leads the defending forces. He not only makes first contact with the enemy but is the scout to avoid a surprise attack. His opportunities and responsibilities are enviably great. Nowhere is this more true than in cancer of the prostate.

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**Mental Hygiene in Virginia.**

A start has been made in mental hygiene in Virginia. What has been accomplished indicates that our State is keeping pace with other communities where there have been formal efforts for a longer period, and where financial conditions have been more favorable. Though in time past, not so far remote, there were initiated and accomplished in Virginia under wise leadership, important advances in psychiatry and mental hygiene, and more extensive and improved institutional care and treatment of the mentally sick and disabled and the epileptic and the delinquent, the present regime of public welfare, supported by a forward looking medical profession and State government has put into operation a more definite mental hygiene program in keeping with ideas of the best medical and sociological thinkers and doers of this generation. The es-

tablishment of the Bureau of Mental Hygiene has been one of the Welfare Department's chief accomplishments in the past two years. The Department of Public Welfare receives material financial aid from the Commonwealth Fund for the maintenance of its mental hygiene clinic service, and the entire mental hygiene activities in the State have the influential backing of the National Committee for Mental Hygiene. The annual report of the department containing a resumé of the first full year's operation of the bureau notes certain main activities, namely, the bureau's effort to merit and obtain the support of the medical profession, the continued operation of child guidance and psychiatric clinics, the dissemination of information in and without the profession relative to mental hygiene, the promotion in every possible way of the building up of sound mental health and the prevention of mental disorders.

The central State clinic at Richmond and the mobile clinics that have been operated in three other cities of the State—Norfolk, Roanoke, and Danville—have given social, physical, psychological, and psychiatric studies and advised treatment for a total of nearly seven hundred patients referred by physicians, teachers, social agencies, and juvenile courts. Every case, other than those committed by the courts, referred to the central or any of the mobile clinics had the endorsement or recommendation of a regular physician, usually the family physician. These patients present behavior, mental, or psychiatric problems. Children needing, according to the judgment of the clinic, physical treatment, are sent either to the Medical College of Virginia Out-Clinics where they have received excellent attention by specialists or to their family physicians.

The educational features of the program have been furthered through medical, social welfare, and civic channels. Publication in the medical press of papers and news notes relative to mental hygiene have been regarded as of particular educational value. Psychological surveys, more or less complete, have been made of the children in two large orphanages and steps are now being taken to conduct similar studies in another children's institution. In each instance suggestions are made to the authorities relative to the individual's school work and personal management.

The bureau is planning also to extend the services of its mental clinic to the boys and girls in the State Industral Schools by making some special psychological and psychiatric studies of selected cases.

The official organization of the bureau consists of a director, who is a psychiatrist, a consulting psychiatrist, a small clinic staff, all of whom are technically trained.

It is interesting that a number of the boys and girls under eighteen are guilty of felonies. Psychiatric study of such cases is an especially important work of the clinic staff. All persons under eighteen years old charged with or guilty of any crime must be committed to the Department of Public Welfare, if commitment to any agency is found necessary. In several instances individuals charged with crime have been referred by the courts to the bureau for special study as to their mental condition. It would seem that this is an extremely useful field for mental hygiene service.

Other valuable efforts in the psychiatric field in Virginia antedated the Bureau of Mental Hygiene. Such are the Children's Memorial Clinic, a Richmond organization which has developed since its opening in 1924 into one of the outstanding child guidance clinics in the country. Its accomplishments last year with 1,510 problem children of Richmond makes it one of the city's most valued assets. It is worthy of note that this clinic is now awarding a fellowship in psychiatry.

Under the auspices of the Health Department of Lynchburg a child guidance clinic is in operation there and prospects for its future growth are promising.

Mental hygiene in dealing with the delinquent and the frank criminal is more and more receiving merited attention. Psychiatric service at the State Penitentiary rendered by a part-time psychiatrist and the mental hygiene advisory board, consisting of several psychiatrists, continues its efforts to solve behavior and mental problems of convicts. The annual report of the psychiatrist brought out some interesting observations as to insanity and crime relative to inmates of the prison.

In the situation today in Virginia one sees advanced steps being taken in psychiatry in the medical schools and the mental and neuropsychiatric hospitals and clinics. Giving the medical students a better opportunity to observe and study mental cases of every variety at the bed-side in a State hospital, and pro-

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viding opportunity for mental hygiene studies at both medical schools, are accomplishments of significance. Another step forward is in psychiatric clinics operated by the State hospitals at meetings of medical societies and fostered by the Department of Clinical Education of the Medical Society of Virginia and the State Bureau of Mental Hygiene. Another sign of awakening interest in psychiatry and mental hygiene has been shown in the increasing number of papers presented before State and local medical associations and non-medical bodies such as nurses associations and publications in the VIRGINIA MEDICAL MONTHLY of items relative to mental hygiene as a means of interesting and informing the medical profession.

In carrying out a program embracing the principles and practices of mental hygiene, the important place of the public school system is so obvious that no discussion of that phase of the subject is needed. It is said that the behavior problem child and the mentally defective child is the most difficult responsibility in the field of public education. Cooperation between the physician, the parent, the teacher, the social worker, the public health officials and the school nurse are necessary to effectiveness in efforts in the mental hygiene field. While there has not yet been a general movement for mental hygiene in our public school system nor in our colleges, individual teachers and school nurses have referred problem pupils for study by the State clinic. The number of these has increased during the past year. The University of Virginia has initiated forward looking activities in mental hygiene.

From the point of view of need of prevention, training, hospitalization, community supervision, and from that of medico-legal complications, and eugenics, the feebleminded constitute one of the most complicated problems with which the medical and social professions and the State have to deal. Mental hygiene workers are not unmindful of this fact, and of their responsibility for contributing to solutions.

The Medical Society of Virginia has again, through resolutions adopted by the House of Delegates at the 1930 session, given approval to the efforts of the State Bureau of Mental Hygiene. To give these resolutions practical application in bringing an even closer relationship between the medical profession and the bureau, a special committee on mental hygiene was created at the meeting of the State society last October to render whatever service is practicable in promoting the efforts of the bureau, and to report to the next annual meeting of the State society the best manner in which the society can help in the mental hygiene movement in the State.

The International Congress on Mental Hygiene held in Washington within the past year, undoubtedly awakened more extended interest in the objectives of mental hygiene in this State, as it did throughout the rest of the world. The mental hygiene movement in Virginia may be expected to continue to develop a carefully planned program so long as it has the support of the medical profession and the intelligent public.

# News Notes

**The Tri-State Medical Association of the Carolinas and Virginia**

Is to hold its thirty-third annual meeting in Richmond, Va., February 16th and 17th, under the presidency of Dr. W. B. Lyles, of Spartanburg, S. C. Dr. Beverley R. Tucker, Richmond, is chairman of the Committee of Arrangements. Headquarters will be at the Jefferson Hotel. The first session will start at 9 o'clock on the morning of the 16th and an interesting program is being arranged. Dr. Louis Hamman, Baltimore, and Dr. John R. Caulk, St. Louis, are the invited guests, and each will deliver an address and give a clinic. A number of other clinics will be held by members of the Association.

All members are urged to attend. For special information, write the secretary, Dr. J. M. Northington, Charlotte, N. C.

**The American College of Physicians**

Will hold its fifteenth annual Clinical Session in Baltimore, Md., March 23-27, and in Washington, D. C., March 28, 1931, under the presidency of Dr. Sidney R. Miller, of Baltimore.

The entire program of the Clinical Session is characterized by new subjects and new authors. An added feature of the Clinical Session this year is an additional day to be spent in Washington, D. C., where a special program of clinics and inspection tours has been arranged under the auspices of the Medi-

cal Departments of the U. S. Army, Navy, and Public Health Services and Georgetown University. On the General Scientific Programs there will be forty-five or fifty selected formal papers. Several symposia have been arranged.

A special program of entertainment will be given for the visiting ladies.

For further information or programs, write Mr. E. R. Loveland, Executive Secretary, 133-135 E. 36th St., Philadelphia, Pa.

**University of Virginia, Department of Medicine, News.**

At the meeting of the University of Virginia Medical Society on January 5th, Dr. Allen F. Voshell discussed "Perthes' Disease." Dr. John Ware gave a report on "Fractures of the Femur," and Dr. Halstead S. Hedges discussed "Arterial Changes in the Fundus of the Eye."

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On January 13th, Dr. Oscar Swineford and Mr. E. K. Hawke attended the meeting of the Post-Graduate Medical Society of Southern Virginia at Hopewell. Dr. Swineford read a paper on "Pathological Physiology of Clinical Allergy" and Mr. Hawke reported on "Angioneurotic Edema."

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Mr. Michael M. Davis, Director of the Health Unit of the Rosenwald Foundation of Chicago, visited the Medical School on January 16th.

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Dr. J. Edwin Wood addressed the Staff of the Cleveland Clinic on January 21st, on the subject of "Hypertension."

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Professor Julian Huxley, of the University of London, visited the Medical School on January 19th. He gave an address to the University audience on the subject of "Science and Human Nature."

**Polyclinic Hospital Opens New Addition.**

The new twelve-story addition to the New York Polyclinic Medical School and Hospital on West 50th Street, New York City, constructed during the past year at a cost of more than $1,500,000, was formally opened December 29, 1930, following a dedication luncheon sponsored by the women's auxiliary of the institution.

The addition will provide ample ward space for teaching and also will provide additional space for clinics. Seven floors will be devoted exclusively to clinics, while four floors are designed for private patients.

The entire tenth floor of the main building has been reconstructed into seven new operating rooms and equipped with the most modern hospital facilities. A lounge and consultation room has been provided for the medical staff.

The Polyclinic was organized in 1881 and its first building was on East 34th Street.

The new addition will increase the capacity of the hospital to about four hundred and fifty patients a day and at the same time permit clinical service to more than six hundred out-patients.

There are more than three hundred and fifty physicians and surgeons on the staff of the institution, and more than thirty thousand student doctors from all parts of the world have taken post-graduate courses in it during the fifty years of its existence.

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The School announces the appointments of Dr. Frederick M. Allen as Professor of Internal Medicine (Metabolism) and Dr. Everett M. Hawks as Professor of Gynecology and Obstetrics.

**Award to be Made for Essay on Study of Goiter.**

The American Association for the Study of Goiter again offers an award of three hundred dollars ($300.00) for the best essay based upon original research work on any phase of goiter presented, at their annual meeting in Kansas City, Mo., April 7, 8, and 9, 1931. It is hoped this offer will stimulate valuable research work, especially in regard to the basic cause of goiter.

Competing manuscripts must be in the hands of the Corresponding Secretary, J. R. Yung, M. D., Terre Haute, Ind., not later than April 1, 1931, to permit the award committee sufficient time to examine all data. Manuscripts arriving after this date will be held for the next year or returned at the author's request.

First award of the 1930 annual meeting held in Seattle was given Dr. William F. Rienhoff, Jr., of Johns Hopkins University, Baltimore. Drs. O. P. Kimball, of Cleveland, Ohio., E. P. and D. R. McCullagh, Cleveland, Clinic Foundation, Cleveland, Ohio, and Robert P. Ball, of the University of Louisville, received honorable mention.

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**Married.**

Dr. Edwin Crowell Hamblen, University, Va., and Mis Agnes Morton Baptist, daughter of Dr. and Mrs. H. L. Baptist, of Ivy, Va., December 27th.

Dr. John Claiborne Palmer, of the class of 1930, University of Virginia, Department of Medicine, and now interning at Charleston, W. Va., General Hospital, and Miss Jane Foster, The Plains, Va., January 3rd.

Dr. Frank Ivan Steele, Windsor, Va., of the class of '29, Medical College of Virginia, and later on the resident staff at Memorial Hospital, Richmond, and Miss Anna Belle Macdonald, of Florida, in Richmond, Va., December 27th.

Dr. Davis W. Ritter, of the class of '29, Medical College of Virginia, and Miss Lorraine Manger, of Reading, Pa., November 2nd. Dr. Ritter recently completed a residency at St. Joseph's Hospital, Reading, and has located in Winchester, Va., where he is associated in practice with Dr. C. R. Anderson.

**Medical College of Virginia News.**

The Medical College of Virginia, Richmond, is working out plans for the inauguration of the St. Philip Hospital post-graduate clinic to open on June 16, 1931, for the instruction of Negro practitioners at the St. Philip Hospital, a unit of the college maintained for Negro patients and the training of Negro nurses. This clinic will run for ten days or two weeks and will be limited to twenty students. It has been endorsed by the Department of Clinical Education of the Medical Society of Virginia, by the executive faculty of the School of Medicine of the college, and by both the State and local medical societies of the Negro profession. Financial assistance is expected from one or several of the larger foundations. It is hoped to make the post-graduate clinic an annual event, opening after the regular session of the medical school has closed.

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With more than 3,000 patient visits reported for December, that month goes on record as the largest in the history of the out-patient department of the Medical College of Virginia, Richmond. The total number of visists was 3,109—431 more than those noted for the corresponding month of last year.

Mr. Junius P. Fishburn, president of the Times-World Corporation, Roanoke, Va., will deliver the address at the commencement exercises of the Medical College of Virginia, Richmond, June 2, 1931.

**Dr. W. L. Harris,**

Norfolk, Va., prominent specialist in diseases of children, was recently appointed Medical Director of the Schools of Norfolk, consequent upon which he retired from private practice on January 1st. His appointment has met the enthusiastic approval of his professional associates and of laymen generally.

On the evening of Tuesday, January 20th, the profession of Norfolk tendered Dr. Harris a complimentary banquet at the Norfolk County Country Club, which was attended by a majority of the physicians of Norfolk and vicinity.

**Fellowships in Psychiatry.**

Fellowships of $2,000 to $2,500 are open to physicians with previous hospital training in psychiatry, who wish to prepare themselves for extramural psychiatric work in the fields of child guidance, delinquency, dependency, education, and industry, announces the *Mental Hygiene Bulletin*. The course of training offered covers approximately one year and includes assignments for three or four month periods to various hospitals and clinics for practical instruction. Further information may be obtained from the National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

**Conference on T. B. Clinics.**

Dr. C. Lydon Harrell, Norfolk, chairman of the Committee on Tuberculosis Clinics of the Medical Society of Virginia, Dr. Wm. P. Gilmer, Clifton Forge, a member of this committee, and Dr. J. Allison Hodges, President of the State Society, met with officials of the State Board of Health in Richmond, January 19th. At this conference there was a discussion of tuberculosis clinics and the work of the X-ray service of the Department of Health.

**New Superintendent for Piedmont Sanatorium.**

Dr. J. Belmont Woodson, of Nelson County, member of the State Senate from Amherst and Nelson counties for some years, has been elected by the State Board of Health as superintendent of the Piedmont Sanatorium at Burkeville, Va. He will succeed Dr. W. H.

Venable, who resigned last fall. The Burkeville sanatorium is for Negro patients.

**Pamphlet on Prenatal Care.**

The United States Department of Labor has revised and reissued "Prenatal Care." This new pamphlet has a green cover to distinguish it from the old one. Dr. Greer Baughman, chairman of the Maternal Welfare Committee of the Medical Society of Virginia, and professor of Obstetrics at the Medical College of Virginia, states that he has made it a practice for many years to give a copy of Prenatal Care and Infant Care to each of his pregnant patients and has found that they are greatly helped by reading them.

These pamphlets can be obtained by writing to the U. S. Department of Labor, Washington, D. C., or to your congressman.

**The Robeson County (N. C.) Medical Society**

Held its January meeting on the 8th, at Lumberton, N. C. Interesting and instructive papers were presented by Drs. J. A. Martin and E. L. Bowman, both of Lumberton. Both are alumni of the Medcal College of Virginia, Dr. Martin having graduated in 1915 and Dr. Bowman in 1914.

**Dr. E. D. Davis, Jr.,**

Graduate of the University of Virginia, Department of Medicine, in the class of '27, and formerly with the United States Navy, is now located at Crozet, Va., in the practice of general medicine.

**Dr. Charles P. M. Sheffey,**

Who has been practicing medicine in Lynchburg, Va., for the past three years, has sailed for Brussels where he will study at the government school of tropical medicine for three months before going to the Congo region, Africa, where he expects to remain as a medical missionary for five years. Dr. Sheffey's marriage to Miss Mae Joy Burch was announced in the January issue of the MONTHLY.

**Dr. L. E. Cockrell,**

Reedville, Va., was elected one of the trustees of the Reedville Lodge, No. 71, Knights of Pythias, at their annual meeting the middle of January.

**Graduate Course in Specialties.**

The Gill Memorial Eye, Ear, and Throat Hospital will hold its Fifth Annual Spring Graduate Course in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Oral Surgery, Bronchoscopy, and Esophagoscopy, March 23-29, 1931, at Roanoke, Va. These subjects are to be presented by men of national reputation.

For further information, address Dr. E. G. Gill, Box 871, Roanoke, Va.

**First Award Under Thomas W. Salmon Memorial.**

Dr. Adolf Meyer, Professor of Psychiatry of Johns Hopkins University, has been chosen to receive the first award under the recently established Thomas W. Salmon Memorial. The award carries with it an honorarium of $2,500 and the recipient will give The Thomas W. Salmon Lectures during 1931.

Dr. Meyer is an outstanding man among the psychiatrists of the world, having been one of the organizers of the National Committee for Mental Hygiene, the agency largely responsible for the development of the mental hygiene movement in this country and the world over. He is a past president of the American Psychiatric Association and the American Neurological Association.

**Dr. Benj. E. Hunt,**

An alumnus of the Medical College of Virginia, class of '24, who practiced for sometime at Holden, W. Va., has entered upon a year's residency in obstetrics at Jersey City Hospital, Jersey City, N. J. Dr. Hunt recently completed a post-graduate course in gynecology and obstetrics at the Graduate School of Medicine of the University of Pennsylvania.

**Dr. E. Pendleton Tompkins,**

Lexington, Va., was recently elected by the Kiwanis Club of that place as the District Trustee for the year 1931.

**Pendleton S. Tompkins,**

A senior in the Medical School of Washington University, St. Louis, Mo., spent several days with his parents in Lexington, Va., during the holidays.

**The Sight-Saving Review**

Made its initial appearance in January. This is a quarterly magazine, devoted to all aspects of prevention of blindness and conservation of vision. According to Mr. Lewis H. Carris, Managing Director of the National Society for the Prevention of Blindness, "The new journal is designed to meet the needs of state and local prevention of blindness workers, educators, illuminating engineers, school physicians and nurses, safety engineers, public health administrators, industrial physicians and nurses, sight-saving class teachers and supervisors, ophthalmologists, and anyone in-

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terested in the sociologic phases of saving sight."

*The Sight-Saving Review* will contain original articles, abstracts from current periodicals throughout the world, book revews, and reports of the Society's activities. Mr. Carris is Editor and Miss Isobel Janowich Managing Editor, with a large Editorial Board.

**Dr. Otis Marshall,**

Formerly of Culpeper, Va., has located in Washington, D. C., where he has accepted a position with the American Red Cross as Field Representative, First Aid Service, Eastern Area.

Dr. Granville Eastham, formerly of Rapidan, Va., has taken over Dr. Marshall's practice in Culpeper.

**Dr. W. H. Venable,**

Recently in charge of Piedmont Sanatorium, Burkeville, Va., has located at 634 Oak Street, Farmville, Va.

**Dr. P. S. Schenck,**

For many years Health Commissioner of Norfolk, Va., is on a leave of absence due to ill health. At the close of his leave, he will retire from active work.

Dr. Frank Hancock and Mr. H. G. Parker, city bacteriologist of Norfolk, are acting in place of Dr. Schenck.

**Dr. and Mrs. S. E. Weymouth,**

Callao, Va., left on January the 12th for a visit to Florida where they expect to spend the remainder of the winter season.

**Dr. Emily Gardner,**

Formerly connected with Child Health work in Virginia, has just completed a fifteen months' service at the Babies' Hospital, New York City, and is visiting her parents at Franklin, Va., before taking up practice.

**The American Board of Obstetrics and Gynecology,**

Composed of nine members and examiners, elected by The American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, The American Gynecological Society, and the Section on Obstetrics, Gynecology, and Abdominal Surgery of The American Medical Association, was formally organized in Niagara Falls, September 16, 1930. The function of the Board is to grant certificates indicating proficiency and specialization in Obstetrics or Gynecology, or both, to those who comply with its requirements.

The Board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician, but it does aim toward standardized qualifications for specialists in obstetrics and gynecology. Any well qualified obstetrician and gynecologist should have no difficulty in obtaining a certificate and the Board is desirous of receiving applications from those to whom this applies.

The first examination for candidates will be held simultaneously in nineteen different cities of this country and Canada on Saturday, March 14, 1931.

Detailed information and application blanks may be secured from Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, Penna.

**Noted Among Bank Directors.**

The following doctors are among those recently noted as bank directors in Virginia: Dr. J. M. Shackelford, Martinsville; Dr. E. S. Carr, Narrows; Drs. R. F. Thornhill and R. H. Woolling, Pulaski; Drs. E. Y. Willis and Granville Eastham, Culpeper; Dr. J. Weldon Smith, Farmville; Drs. T. P. West, J. A. Rucker, and E. L. Johnson, Bedford; Dr. W. O. McCabe, Thaxton; Dr. Wylie C. Mason, Gordonsville; Drs. W. E. Croxton and M. H. Harris, West Point; Dr. W. S. Cox, Shackelfords; Dr. U. H. Johnson, Barhamsville, and Dr. Lewis Holladay, Orange.

**Dr. A. G. Martin,**

Of the Medical College of Virginia, class of '25, who is associated with Dr. W. C. Bowers, at 17 East 61st Street, New York City, in the practice of ear, nose, and throat, has recently been appointed as Assistant Surgeon, E. N. T. Service, Bellevue Hospital, and also Assistant in Otology in the O. P. D., St. Luke's Hospital, that city.

**The Annual Congress on Medical Education, Medical Licensure and Hospitals,**

Held under the auspices of the American Medical Association, is to be in Chicago, February 16th, 17th, and 18th, with headquarters at the Palmer House. On Monday evening, the 16th, a dinner will be held with the Council on Medical Education and Hospitals and the Central Council for Nursing Education as hosts. Dr. Ray Lyman Wilbur, chairman of the former, will act as toastmaster, and Dr. Henry A. Christian of the Harvard University Medical School, will be the speaker. Those attending the conference and their ladies are invited.

On the following evening will be held the annual dinner of the Federation of State Medical Boards.

Many subjects of interest will be discussed at the Congress.

**Dr. Richard H. Meade,**

Who for the past three years has been Assistant Professor of Surgery and Gynecology at the University of Virginia, left on January 1st to become an Associate Surgeon of the Episcopal Hospital, Philadelphia. He is located at 133 South 36th Street, that city.

**Dr. Gladys Smithwick,**

An alumnus of the Medical College of Virginia, class of '25, who has been in medical missionary work in China for the past year, has been transferred from Language School, Peking, to Suchowfu, Kiangsu, China, which is to be her permanent residence.

**Dr. J. Allison Hodges,**

President of the Medical Society of Virginia, was the guest of the State Board of Health at the annual meeting of State Public Health Nurses in Richmond, January 6th. He gave a talk on "The Medical Practitioner's Interest in Public Health."

**Examination for Entrance Into the Regular Corps of the United States Public Health Service.**

Examination of candidates for commission as Assistant Surgeon in the Regular Corps of the U. S. Public Health Service will be held at Washington, D. C., on March 9, 1931.

Candidates must be between twenty-three and thirty-two, and not over thirty-two years of age. They must have been graduated in medicine at a reputable medical college, and have had one year's hospital experience or two years' professional practice. They must satisfactorily pass oral, written, and clinical tests before a board of medical officers, and undergo a thorough physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Request for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

**Age of Parents Important.**

Approximately one first-born child in ten loses his mother before the age of seventeen years, according to a recent issue of the *Statistical Bulletin of the Metropolitan Life Insurance Company.* The probability of his losing his father before that age is slightly higher. A larger proportion of the children after the first-born is likely to lose a parent before the age of seventeen, since the proportion increases with the increasing age of the parent.

**For Sale—**

Account death of owner, thirty-five bed hospital, excellent equipment and location. Splendid practice and patronage. Heart of city of 75,000 population. Write for details, to W. L. Burks, 527 Mountain Avenue, S. W., Roanoke, Va. (*Adv.*)

**For Rent—**

Three nice well-heated office rooms, located on the second floor of the New Sipe Building, facing Main Street, Harrisonburg, Va. Suitable for physician or dentist. If interested write at once to Mr. Wm. Byrd, c/o First National Bank, Harrisonburg, Va., or 3461 14th St., N. W., Washington, D. C., or care this journal. (*Adv.*)

**For Rent—**

Doctor's office on first floor of Piedmont Apartment Building, Culpeper, Va. Splendid opening. Apply to Box 33, Culpeper, Va. (*Adv.*)

## Obituary Record

**Dr. Walter L. Devany,**

A prominent and highly respected physician of Dendron, Va., died January 6, 1931, after a long and painful illness. He was born in Southampton County, Virginia, October 15, 1858. Dr. Devany graduated from the Medical College of Virginia in 1883, and soon thereafter located in Wakefield, Va. He had a large practice in Wakefield and the surrounding territory, including the town of Dendron, about seven miles distant from Wakefield. In August, 1900, he moved to Dendron, where he practiced up to a few weeks before the time of his death.

Dr. Devany was a member of the Medical Society of Virginia from the year of his graduation, and was, at one time, a Vice-President of this Society. He was also a member of the Post-Graduate Medical Society of Southern Virginia, Seaboard Medical Association and the Southside Virginia Medical Association.

Dr. Devany was always loyal to his Alma Mater, and was an ex-President of the Alumni Association of the Medical College of Virginia. He was a true representative of the old

family physician, who devoted his life to the alleviation of the suffering of humanity.

He is survived by his wife, three daughters, two sons, three sisters and two brothers.

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**Dr. Hugh T. Nelson,**

Charlottesville, Va., died suddenly on January 16th, aged fifty-four years. He was a son of the late Dr. H. T. Nelson, and received his academic and medical education at the University of Virginia, from which he received his professional degree in 1899. He also graduated from the U. S. Naval School and, after two years of hospital work in New York, served as a surgeon in the U. S. Navy. Resigning from the navy in 1906, he located at his old home in Charlottesville, and identified himself with the medical interests of this State. He joined the Medical Society of Virginia that year. Dr. Nelson was an instructor in medicine at the University of Virginia, and a veteran of the World War, having served in the Medical Corps with the rank of major. He was in active service in France during the Meuse-Argonne offensive. His wife, two sons and a sister survive him.

**Dr. Daniel Tatum Merritt,**

Nathalie, Va., died suddenly on January 19th, death being due to heart disease. Although he was in the hospital recently for heart trouble, his death was unexpected. Dr. Merritt was born in South Boston, Va., July 6, 1869. Upon completing his academic education at Hampden-Sidney College, he entered the former University College of Medicine, Richmond, from which he received his medical diploma in 1896. He had been a member of the Medical Society of Virginia for more than thirty years. In addition to his professional work, Dr. Merritt was interested in civic affairs and was a member of the Halifax County School Board. He was also a Mason. His wife survives him.

**Dr. James W. Kelly,**

Prominent physician of Big Stone Gap, Va., died of pneumonia at the Norton Hospital, December 11th. He was born in Tazewell County, Virginia, about seventy years ago. Upon completion of his academic education, he entered the University of Maryland, from which he graduated in medicine in 1887. He had been a member of the Medical Society of Virginia since 1896. His wife and a large family connection survive him.

**Dr. William Edward Price,**

Meredithville, Va., died suddenly, January 22nd, it is believed, as a result of an apoplectic stroke. He was found dead in his car which ran over an embankment, shortly after leaving home to answer a professional call. Dr. Price was prominent in the social and political life of the county and was a prominent physician in Southside Virginia. He was born in Brunswick County in 1860 and graduated from the University of Virginia, Department of Medicine, in 1882. Dr. Price was a member of the Medical Society of Virginia. His wife and a sister survive him.

**Dr. John H. Young,**

Burkeville, Va., died December 22, 1930. He was seventy-two years of age and a native of Dinwiddie County, Virginia. Dr. Young graduated from the Southern Medical College, Atlanta, Ga., in 1882. He had been a member of the Medical Society of Virginia for forty years. Dr. Young is survived by his wife and one son.

**Dr. Henry Louis Gunn,**

Halifax, Va., died in a South Boston hospital, January 4th, death being due to pneumonia. He was born in 1870 and graduated from the Medical College of Virginia in 1899. He is survived by his wife and four children.

**Dr. John William Humphries,**

Well-known physician of Northern Virginia, died suddenly at his home in Culpeper, Va., January 14th, death being due to heart trouble. He was fifty-one years of age and a graduate of the George Washington University Medical School, Washington, D. C.. in 1906. Dr. Humphries was a Mason. He had been a member of the Medical Society of Virginia for twenty-two years. He is survived by his wife and three sons.

**Dr. William Ernest Evans,**

Rowland, N. C., died December 11, 1930, from injuries received when the automobile in which he was driving was struck by a train. He was sixty-one years of age and a graduate of the Medical College of Virginia in 1894.

**Dr. Charles P. Bolles,**

Wilmington, N. C., was accidentally asphyxiated on November 28, 1930. He was fifty-six years of age and a graduate of the University of Virginia, Department of Medicine in the class of '97.